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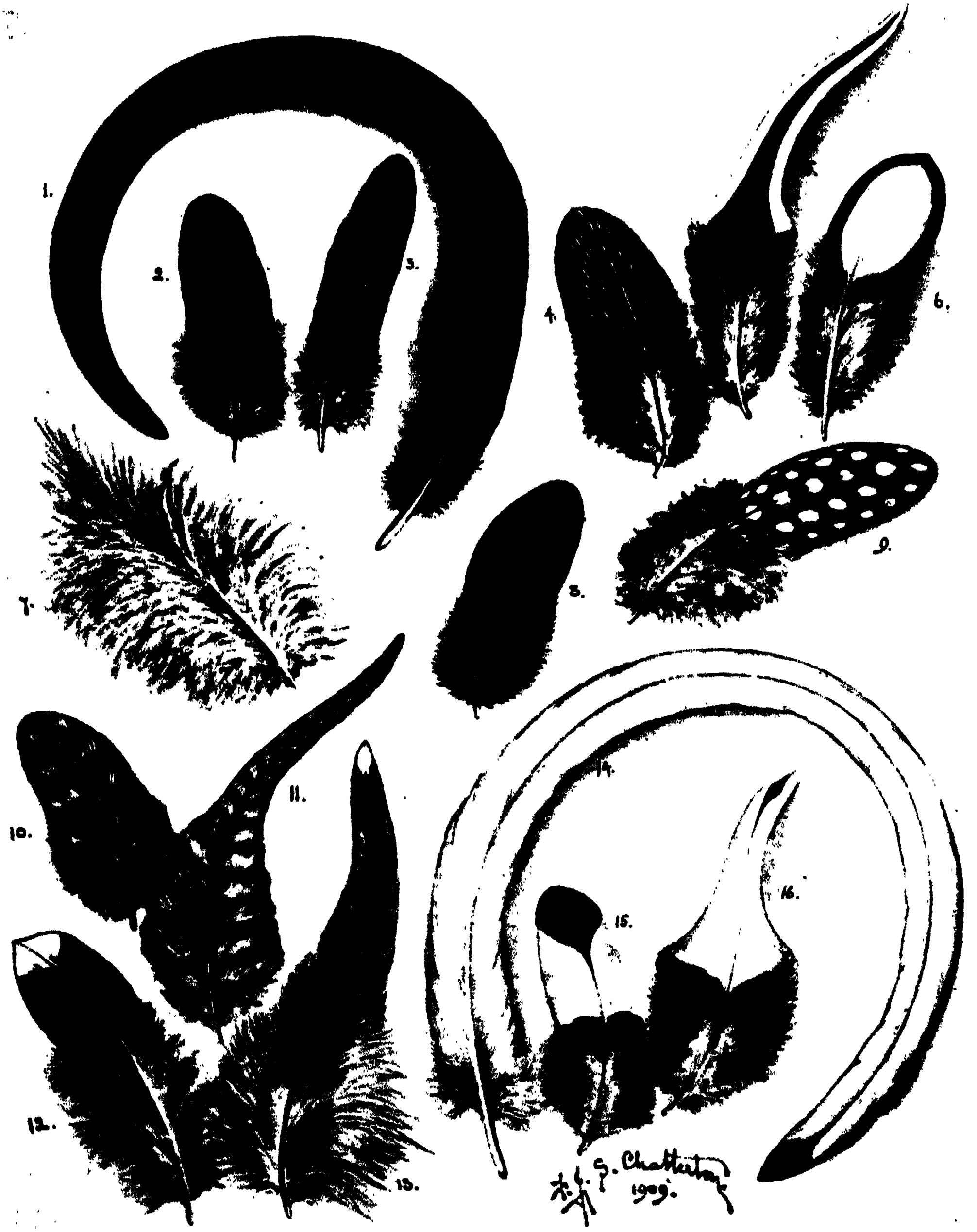
PLATE No. 55.



Types of Feathers.

1. Golden Pencilled (Hamburgh Sickle). 2 & 3. Golden Pencilled (Hamburgh Hen Feathers). 4. Partridge (Cochin). 5. Silver Laced (Wyandotte Cock's Hackle). 6. Silver Laced (Wyandotte Hen's Breast). 7. Silkie. 8. Double Laced (Indian Game Hen). 9. Spotted (Guinea Fowl). 10. Barred (Plymouth Rock Hen). 11. Barred (Plymouth Rock Cock's Hackle). 12. White Spangle (Houdan Hen) 13 White Spangle (Houdan Cock's Hackle). 14. Black Spangle (Silver Spangled Hamburgh Sickle). 15. Black Spangle (Silver Spangled Hen's Breast) 16. Black Spangle (Silver Spangled Cock's Hackle)

THE
ENCYCLOPÆDIA
OF
POULTRY

EDITED BY

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(ILLUSTRATED)

Vol. II.

LONDON:
WALTER SOUTHWOOD & CO., LIMITED,
30, CRAVEN STREET, W.C.

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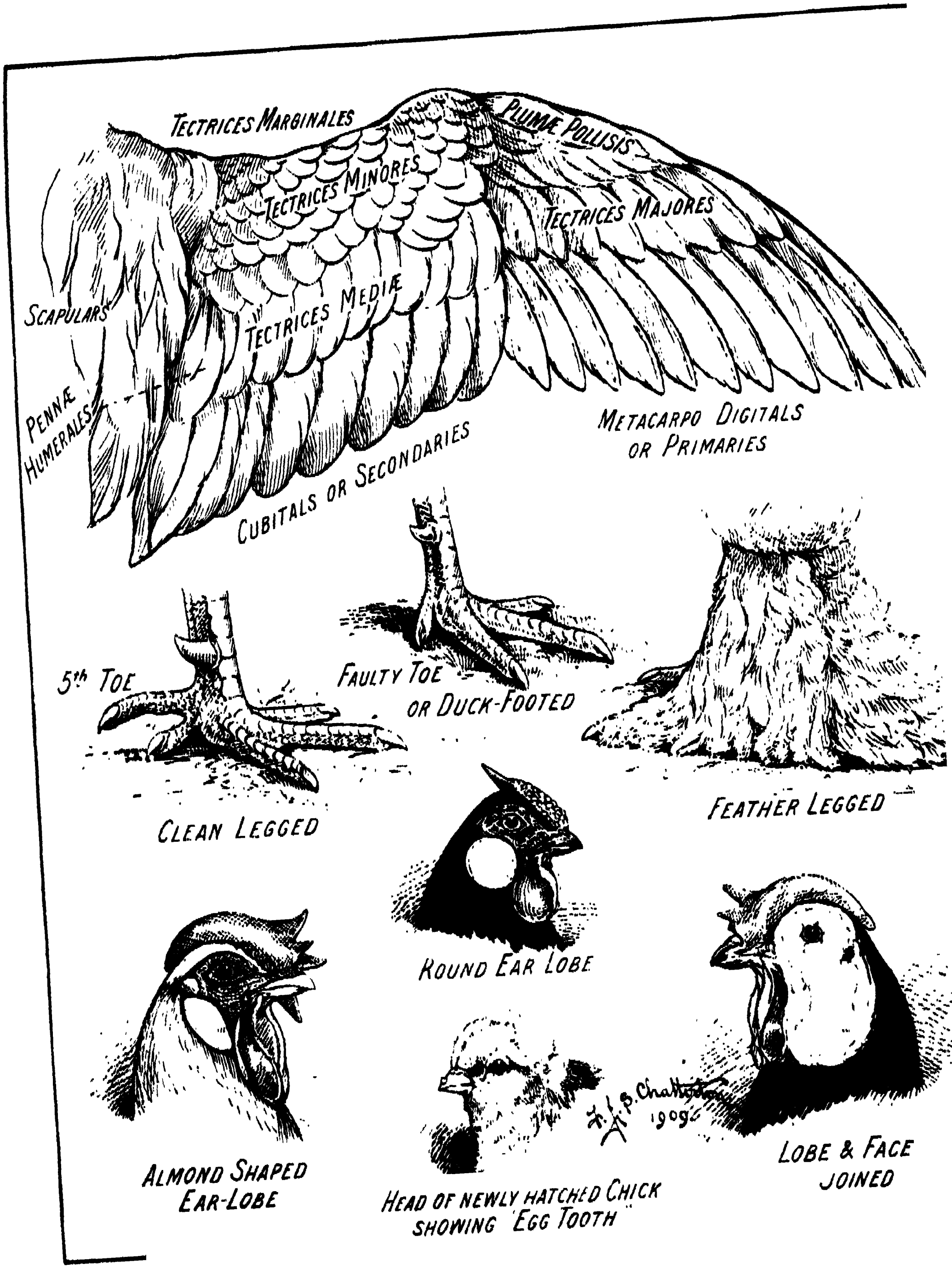


Technical Terms Used in Describing Fowls.

THE
ENCYCLOPÆDIA OF POULTRY
VOL. II.

LA BRESSE (*see* "French Breeds").

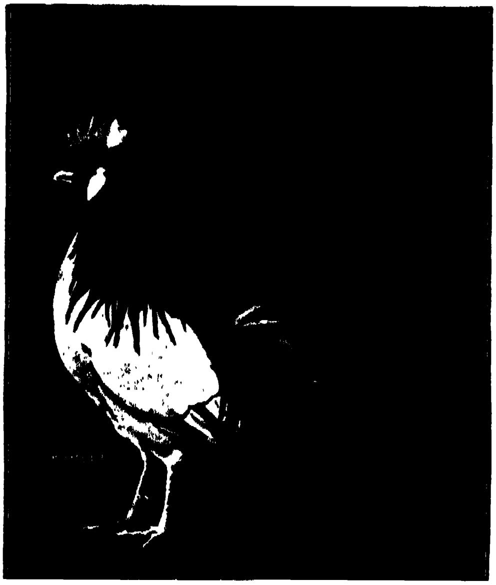
LACED. A feather edged with a narrow band of a darker shade.

LA FLÈCHE (*see* "French Breeds").

LAKENFELDER. This, as the name implies, is a German breed—a breed that in England has never claimed more than half-a-dozen admirers, and is at the present moment on the verge of extinction over here. Why that should be it is really rather difficult to say. The breed certainly lacks nothing in distinction—it is of a colour and markings that are seen in no English or imported race; its utility qualities are not great, but on that account are capable of so much the more improvement. Why, therefore, it should not have attracted a small (and growing) following remains something of a mystery.

The Lakenfelder is a product of Hanover and possibly owes some of its composition to the Belgian breed, the Braekel, or to the Campine. Certainly it resembles these in type, but the plumage, of course, is entirely different. In Germany this fowl has been known for at least seventy years, and at one time enjoyed great popularity. Later that popularity waned and the Lakenfelder almost died out, but then it was revived, and to-day there are few more popular breeds in its native land. At Continental exhibitions it is seen fairly frequently, but in this country has only appeared at the very largest shows. For a year or two classes were put on at the International (Crystal Palace), but latterly even these have been expunged and the breed is never catered for. At the International of 1908 a good cock won first in the A.O.V. class, and that, so far as can be ascertained is the only specimen recently exhibited.

The Lakenfelder is, as has been stated, of striking and handsome appearance, and, had it more size, must have attracted the attention of English fanciers. Like the majority of these continental races, however, it is small and "slight"—little larger, in fact, than the Campine. The striking feature of the bird is the plumage—the black hackles and tail, the pure



Lakenfelder Cockerel.

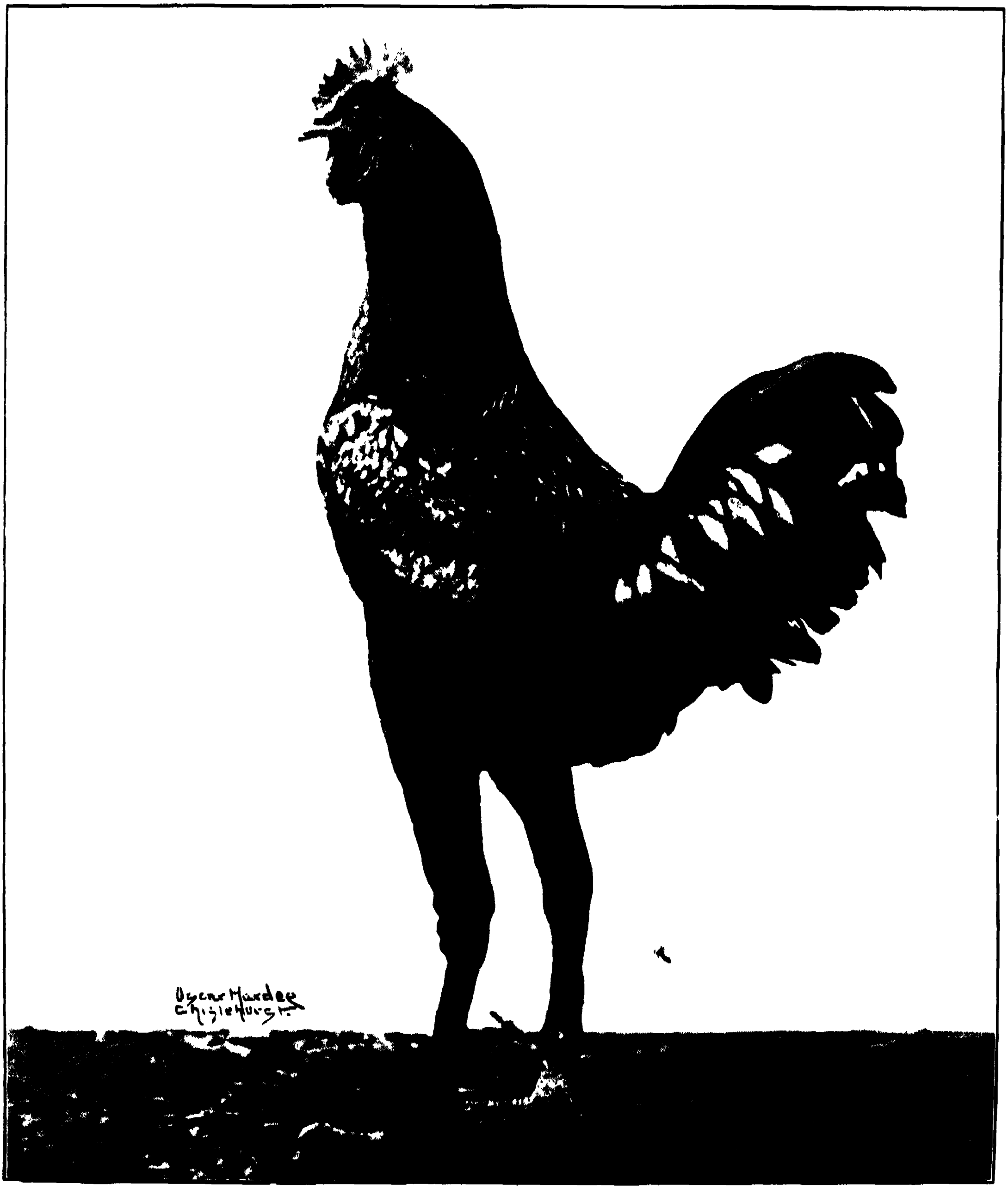
white of wings and under parts. This combination is unknown in any other breed of fowl and, in the opinion of the writer, good Lakenfelder plumage is as handsome as it is difficult to obtain. That it is difficult to obtain is inevitable. The long flowing hackles and tail must be a rich sound black, the breast, wings and under parts generally must be pure white In the hens white edging is allowed in the smaller tail feathers; the cock, however, should have absolutely sound tail and sickles. Now, it will be readily seen that these limitations of black and white must be difficult to obtain and preserve. In inferior specimens the white encroaches on the black, and *vice versa*, black ticking appears on what should be a white breast. It is better in these cases to err on the side of having too much black in the strain—that is to say, it is better primarily to try and preserve the black from white by mating stock of grey under colour and deep black top (even if there is ticking on breast) than to go the other way by mating birds of pure white, on top and underneath, and (probably) correspondingly shafty black. This is essentially a case in which the best show birds do *not* make the best breeders; there must be strict discrimination between the two. Due regard must, of course, be paid to head points. The comb is single and varies in size—it has a tendency to grow too large. The colour of the legs and feet is slate-blue and the ear lobes are white.

The Lakenfelder is not a great utility fowl, and here again, perhaps, we have a reason for its lack of popularity. Primarily, of course, it is a laying breed, the type and stern development being such as is always found in continental races of this class. The hen is too small to lay a large egg, but she is fairly prolific and a non-sitter; the eggs are white. The Lakenfelder can, by no stretch of the imagination be described as a good table fowl, being far too slight of body and too actively disposed. On the Continent, the chickens can be fattened early into "milk-chickens," but otherwise the breed has no pretensions to table properties. As a bird of great hardihood, however, and as a small eater, it can be confidently recommended. A cold soil, cold weather, or an exposed range, will not in the least affect it. It is a characteristically hardy German production.

LAND FOR POULTRY (*see* "Soils" and "Small Holdings").

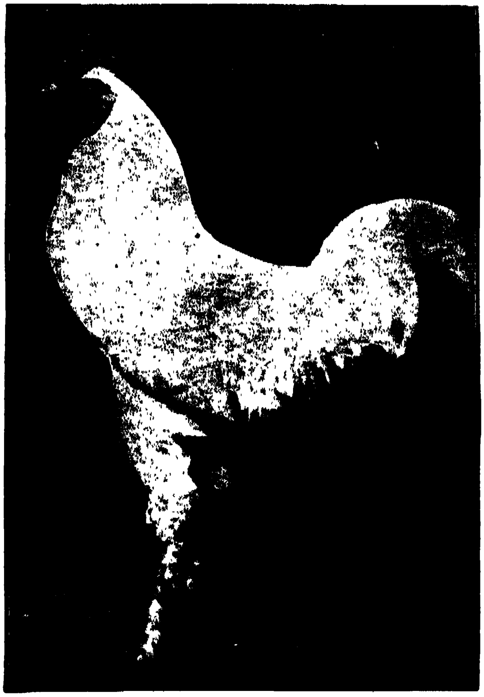
LANGSHAN (MODERN). Length of limb and exceedingly brilliant sheen of a beetle green colour are the outstanding features of this breed to-day. There are three colours to be found, mainly in the yards of fanciers, *viz.*, Black, White and Blue, but as the two last are seldom seen, save at the very largest shows, it will suffice to deal with Black Langshans as the variety typical of the breed, with a few closing remarks on the other two colours. Thirty-six years ago the first importation of Langshans into this country was made by Major Croad. No sooner had the breeders of that day seen the birds exhibited at the Crystal Palace in 1872, than many pronounced them to be identical with Black Cochins. A controversy raged for some time, and to this controversy the Modern Langshan in reality owes its tightness of feather and long-legged appearance. For, when breeders and fanciers who were taking up the new variety found such opposition in the way of producing stock which might be, or was, mistaken for the Cochin, they began to seek for outstanding features in their favourites, which would, when exaggerated a trifle and perpetuated for a generation or two, go far to prove that the Langshan was, as they contended, one of the oldest and purest races under the sun. This few will now doubt, they accomplished, and the Modern Langshan, if not altogether a thing of beauty (though all must admire its lustrous plumage), is certainly a monument to the breeder's art. The remark has already been made that

PLATE NO. 57



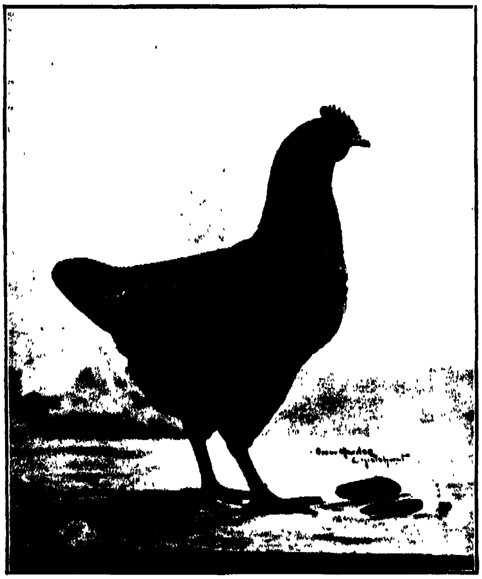
A Typical Modern Black Langshan Cockerel.

the Modern Langshan is rather a breed for the fancier than the utilitarian ; stil as a table bird the flesh is tender and juicy. From the standpoint of an egg-producer, the Modern cannot be regarded as an ideal fowl. But in one point it stands pre-eminent, that of a layer of large and beautifully coloured eggs ; some are almost red and others of a rich chestnut tint. In breeding Modern Langshans up to standard there are several salient features which must ever be borne well in mind when the breeder is selecting birds from which he hopes to secure his winners. Chief among these is colour—not only must a Black Langshan be black all over in plumage, but it must also be green when viewed in certain lights. And the purer and more metallic and richer this black-beetle-green is, so much more valuable for breeding purposes is the bird. Novices are apt to call a bird with decidedly purple lustre a good coloured specimen, but this is not so ; such a bird is, in fact, a very bad coloured specimen, and should be consigned to the pot forthwith. Not only should the plumage be as vivid a green all through as may be obtained, but it should also be of a hard and somewhat "gamey" tightness. Loose feathers, especially saddle, are heavily penalized, and there must be no sign of a cushion. Even on thigh and hock the same close-fitting feathering is essential, and, finally, of course, a somewhat scanty fringe of feathering passes down the shank to the outer toe nail. Leg-feather in this breed should not be at all heavy, and indeed is scarcely noticeable in many specimens. On no account should quills sprout from any toe save the outer. Taking next the legs and feet themselves, these should be dark slate in colour, whilst toe-nails are white, with the skin between them quite pink, this latter being a characteristic and essential feature of the breed. Regarding length of limb, though some exhibitors of the Modern seem to deprecate excessive exaggeration in shank and thigh, there is no doubt that many judges to-day prefer the tallest birds if equal in other respects to their competitors. The eye is an important point, and should be as dark as possible, nearly black. All birds possessing really light eyes should be rigidly excluded from the breeding pen, however excellent in other respects. The beak should be of a "horn" shade, darker at the base than at the top. The face and appendages thereto should be brilliant in their redness. In regard to general type and carriage, a stately and upstanding bird is what the standard requires ; a bird having a fairly long neck, with good hackles, full and deep chest and body, back fairly long and normally carried in a horizontal position and finally a tail carried somewhat high but not squirrel-fashion, with good abundant hangers in the male, who must also possess long



White Langshan Cockerel.

sickle feathers. The above remarks apply equally to both sexes, allowing for the usual differences. Two pens are not required in breeding show cockerels and pullets. The White variety undoubtedly is a pure sport from the Black, and was first seen about twenty years ago. It cannot be said that White Langshans have ever really "caught on," but still at club shows we annually meet with several representative specimens, all more or less conforming to the type described above—colour should, of course, be as pure as possible all over, while beak and legs are also paler than in blacks. Blues are in a more flourishing condition than their White brethren, to whom when crossed with Blacks they undoubtedly owe their origin. Double mating is necessary in order to produce both sexes in exhibition form. This fact, combined with the universal sporting back to Blacks and Whites common to all "blue" fowls may have deterred some from taking up this coloured Langshan. In these days of new blue varieties no doubt a revival may take place. It is found that these birds do not sport back nearly so much as with (for example) Andalusians, the proportion of totally mismarked chicks being about 20 per cent. A medium shade of colour is desired, and lacing is another strong point which must be good, in the male especially. Frequently a dark-coloured male mated with lighter hens produces very good stock. In other points Blues must be similar to Blacks, though they have not attained the "heights" reached by the original colour. (*See Plate No.* 57.)



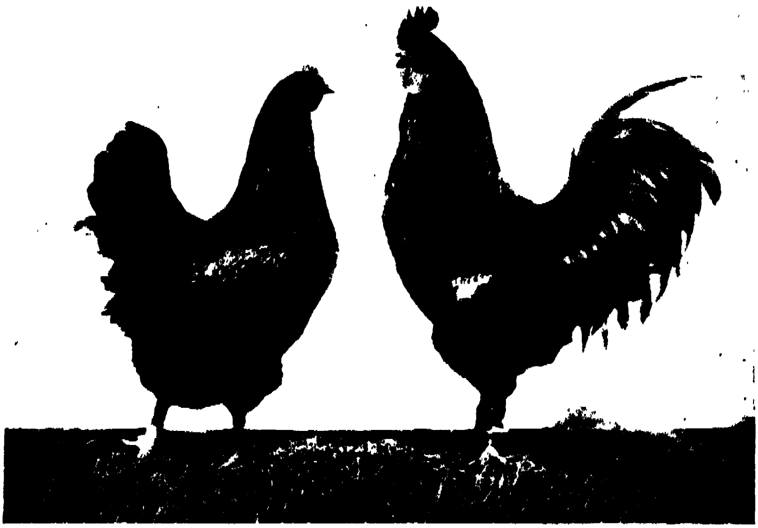
Blue Langshan Hen.

—— **PURE (CROAD).** This, as distinct from the "Modern," is claimed to be the pure original type of Langshan as introduced into this country by the late Major Croad, in 1872, from Langshan, in China. Beauty and symmetry, activity and alertness are its predominating characteristics

Size is an important point—*i.e.*, size consistent with type, for large, coarse, heavy, ungainly birds are of no use, either as utility or exhibition birds. If a cockerel develops as he should he will not have much difficulty in scaling nine pounds, and this without any coarseness or clumsiness.

Carriage and shape are two most important points to be observed. The former is upright and stately, and the height of the bird must not be gained by stiltiness of legs, but by erectness of carriage—the proud and stately bearing is obtained by the head being carried well back, and is emphasised by the graceful curve which a full-flowing hackle produces as it sweeps to the wide shoulders and full, long breast.

The tail is full and well spread, carried fairly high, and should gradually rise by a curve from the back without any break or angle at its root. The side hangers should be numerous, glossy, long, and curved downwards, completely covering the tail proper. The two sickle feathers should be of equal length, well curved and extending six inches or more beyond the rest of the tail. The comb should be of medium size (a pure Langshan should never have a large, beefy comb), evenly serrated with five spikes. It will be found that females with good combs mated to a male with a poor one oftener produce good-combed birds than a male with a good one mated to females with poor ones. The beak should be light to dark horn colour, not long or much curved; but stout, medium length, and slightly arched at its point. Beware of any yellow at its base, for this denotes impure blood. The wattles and ear lobes are both brilliant red and fine in quality. The former symmetrical and of medium size, the latter large and pendant; and they should be without any trace of white, either temporary or permanent, and especially the latter, as this is a sign of impurity. The head is smallish for the size of the bird, neat, well set on, and should be absolutely free from coarseness or heaviness. The eye is fairly large, bright and intelligent. In colour it should be from brown to very dark hazel—the darker the better, a black pupil and dark-brown iris is most desirable. Never breed from a bird with a light eye. The neck should be medium to long and well arched—this, with its full-flowing hackle, produces the symmetry necessary for beauty. The back is a most important section, both from a fancy and utility point of view. It should be of medium length, broad and flat, this breadth continuing to the tail without any sign of pinching at the root of the latter, and then gradually lessening as the tip of the tail is reached. This broadness of back and shoulders produces an appearance of power and solidity, and also denotes strength, vigour and stamina. The breast is round, deep and full, and the breast-bone long, and its keel should be slightly curved, so giving the bird a still greater capacity for carrying meat over and above the large amount for which the pure Langshan is noted. Always select as breeders birds with good breasts, and never use a flat-breasted bird, no matter how good it may be otherwise.



Pure (Croad) Langshans.

The Property of Mr. Aubrey F. Wootten, Croft House, Epsom.

Winners, amongst other prizes, of 2nd Royal, 1909 (Cocks), 1st Royal, 1909.

The leg section is another very important one. These are of medium length, well set apart, strong, straight, and with little bend at the knee. A long leg is most detrimental, both from a utility and fancy point of view—in the former case it means usually leg-weakness, and also coarseness and stringiness of meat on the thigh; and in the latter clumsiness, ugliness and utter want of proportion, beauty and symmetry. On the other hand, the pure Langshan's leg is not very short, nor has the bird a dumpy appearance, as it has been erroneously stated; a rather short thigh and medium length, strong shank are correct. In colour the scales of the shanks should be black, showing pink between them, especially in young birds; but as the birds advance in age these become rather lighter. Any trace of yellow is a sign of impurity. They should also be feathered, but not too profusely nor scantily down the outer sides.

The toes should be long, straight, finely formed, slender and flexible, and the scales on them black and the outer toes feathered. Feathers on the middle toe are apt to appear, but a clean one is preferable. The web and bottom of the foot should be a deep flesh colour; yellow here, too, is a sign of impurity, as also in the toe-nails, which should be pure white.

The colour of the plumage should be black, not a dull, sooty black, nor a rusty black; but a metallic black, with a brilliant beetle-green sheen on saddle, coverts, side hangers, neck and back. Purple or blue sheen and barring, also white of coloured feathers, should be rigorously avoided. Barring always appears in the worst-coloured birds. White tips to feathers is a serious defect. Sometimes one or two feathers in the neck hackle are tipped red. This is not such a serious defect as white tips, for they usually appear in the best-coloured birds, and it is due to excess and richness of colouring matter. A purple or blue tinge is a defect, as is also white in shank and toe feathers (do not misconstrue tinge for sheen—the two are very different).

With reference to practical or utility qualities the inherent hardiness and vigour of the breed make it peculiarly adapted to all climates, positions and soils. Its great prepotency enables it to hand down its excellent qualities to its progeny with great certainty.

As an egg producer (of course there are good and bad laying strains of all breeds) it is one of the best we have, being a continuous, steady layer of good-sized, dark-brown eggs, the majority of which are produced in the autumn and winter. Its eggs are in great demand and always obtain the top market prices.

As a table fowl the pure Langshan ranks with the best. The skin is thin and white, over-lying white, delicate, juicy and closely-grained flesh, which on the breast is abundant, and we may recommend breeders, in order to still further increase this amount, to breed from birds with deep, broad, full, round breasts, whose keel bones are slightly rounded or, rather, curved downwards. The flesh on the thighs, which are short, is tender and finely grained—long thighs usually carry coarse, stringy meat. The bones are hard, fine and also small for the size of the bird. As capons there is only one breed to beat them—*viz.*, Brahmas.

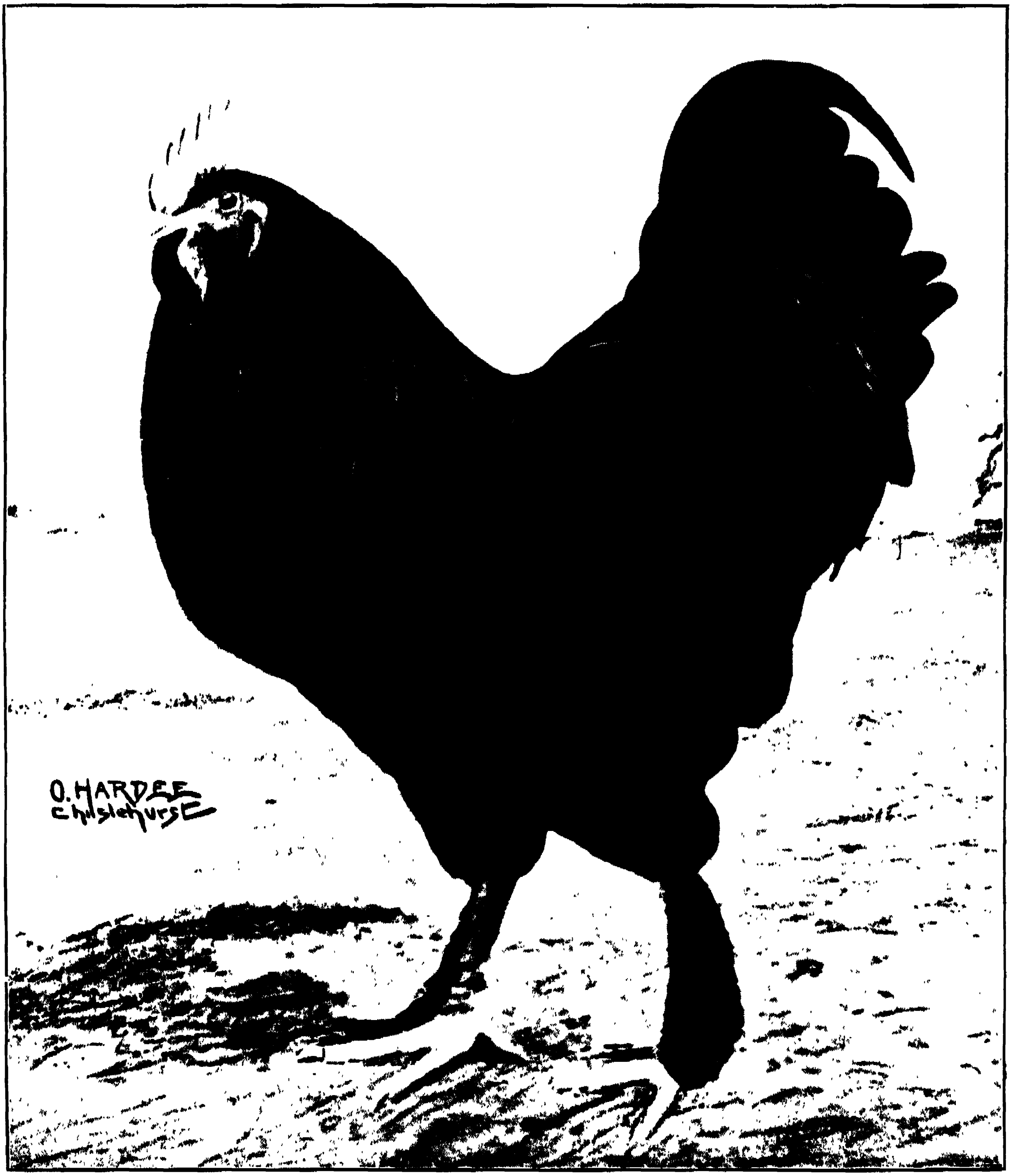
The chickens are hardy, very active and easily reared, and they mature earlier than those of any other Asiatic breed. Both males and females are very quiet and docile, and are excellent foragers. The latter are most reliable sitters. Without that proneness to persistent broodiness noticeable in some of the incubating breeds, they are also very careful and trustworthy mothers. They bear confinement well, and this characteristic and their colour make them quite as suitable for town poultry-keepers as for those who live in the country. (*See Plates Nos.* 58 *and* 59.)

LATENT CHARACTERS (*see* "Heredity").

LAYING BREEDS (*see* "Breeds").

LAYING COMPETITIONS. The first Laying Competition ever held was promoted by the Utility Poultry Club

PLATE No. 58



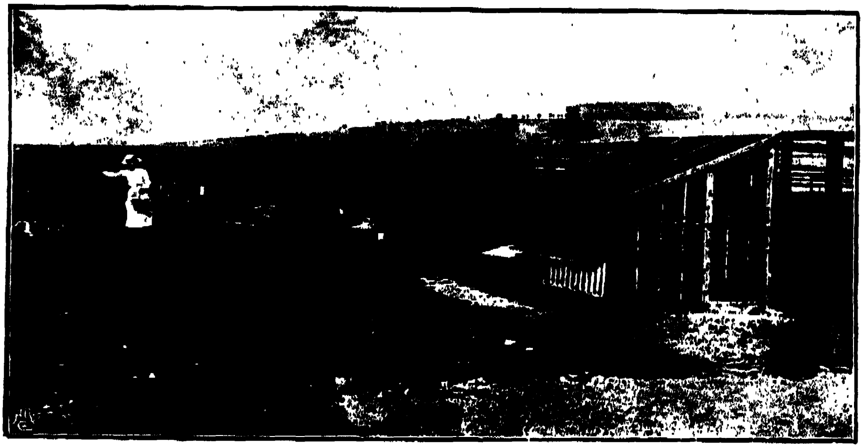
Pure (Croad) Langshan Cock.

(*Bred and exhibited by Mr. Arthur Little, Slyne, near Lancaster*).

A Great Winner.

in the autumn of 1897, and it is quite safe to say that the officials of the newly-formed club had not the faintest notion that the very insignificant little affair held under Mr. Simon Hunter's management, at Northallerton, would become so popular that it would spread to the Colonies, to be subsidized by the Press and by the Government, and completely dwarf the best efforts of the Motherland.

The competition mentioned above only attracted seven entries and consisted of four pullets each. In view of recent performances in this country and elsewhere, it is interesting to note that the first and second prizes were won by Black Minorcas, with records of 161 and 149 eggs respectively, while Langshans came third, with 146. Evidently this was considered satisfactory, and it was decided to have another competition the following year, the conditions being the same, *viz.*, four pullets to form the pen and the competition to last the sixteen weeks of winter, that is, from about middle of October to the middle of February. This competition was held at Penrith under the management of Mr. R. Baynes and attracted twelve entries, but the larger number of entries was not the means of securing better results, and what may now be called the less popular breeds won again, Buff Leghorns 154, Barred Plymouth Rocks 149, Golden Wyandottes 133 and Brown Leghorns 127, being the best scores. Next year the competition was held in Lancashire, and both entries and results were better. Sixteen pens competed and Silver Wyandottes were first, with 223 eggs to their credit, but the second pen, Brown Leghorns, 161 eggs, was no better than before. Buff Orpingtons now appear for the first time, but their record, 151 eggs, is insignificant. It is interesting, however, to note that this pen was owned by Mr. W. Richardson, of Horsham, whose success with this variety in the show pen has been so great. Faverolles with 124 and Black Leghorns with 119 eggs marked the introduction of these newer varieties. Next year the competition was held at Gerrard's Cross, Bucks., and a terrible slump occurred: twenty pens competed but the highest aggregate was only 127, from a pen of Barred Rocks. In this competition, White Leghorns were amongst the prize winners for the first time, but the four birds only laid 39 eggs. Again the competition was held at Northallerton, twenty pens competing, the first prize being gained by Golden Wyandottes with an aggregate of 200 eggs, White Leghorns being second with 185 eggs, Buff Orpingtons with 164, White Leghorns the same number and Anconas 143.



Scene of a U.P.C. Laying Competition at Royston.

The next competition, held at Newbury, Berks., was epoch making, for trap nests were used for the first time, and the individual record of the birds taken; all past records were left far behind, and we find a new breed, White Wyandottes, coming first with the huge total of 276 eggs, Buff Orpingtons being second, third and fourth with totals of 225, 200 and 177 eggs respectively. This competition was the means of introducing the White Wyandotte to the public as a layer, and from this time forward the variety has always stood in the forefront; many breeders have devoted considerable attention to it, and by means of the trap nest have succeeded in building up strains noted for their prolificacy. This remarkable success gave a great impetus to the competitions, and entries becoming more numerous, greater accommodation was provided and thirty pens competed in the next competition, held in Derbyshire. Here again White Wyandottes won, but with a smaller aggregate, *viz.*, 243, the birds, as in the previous contest, belonging to Miss Tammadge. White Wyandottes were second, Buff Orpingtons third and Buff Plymouth Rocks fourth, the first time that this now popular variety had taken a prominent position. Thirty-six pens competed in the next competition, held in Hertfordshire, in which White Leghorns came first with 245 eggs and La Bresse second with five fewer eggs, White Wyandottes and White Leghorns occupying the other prominent positions, Buff Orpingtons having to be content with seventh place.

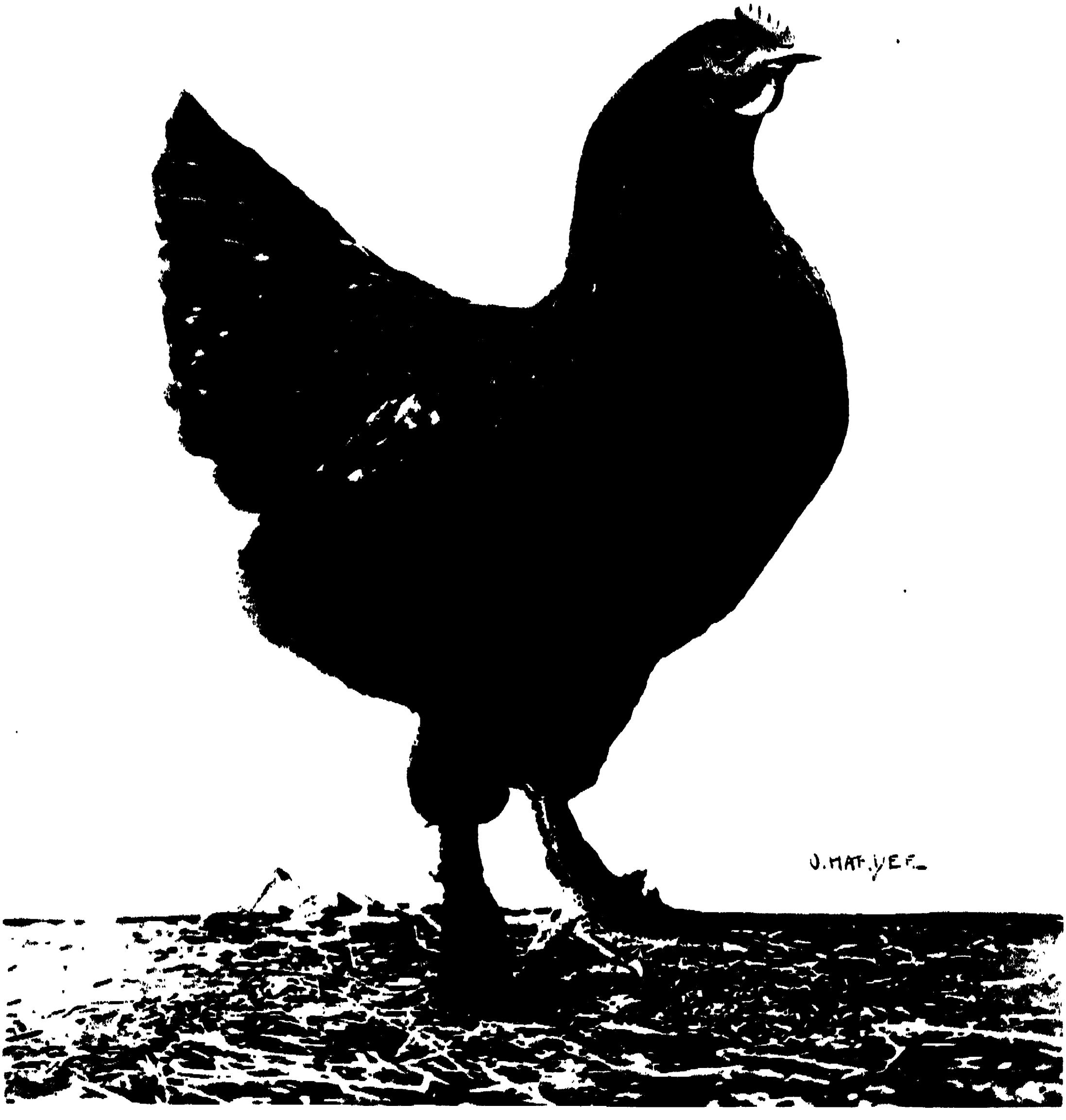
The next competition was held in Warwickshire, thirty-six pens again competing and White Leghorns taking the premier position with 251 eggs, Buff Orpingtons and White Leghorns following, the best pen of White Wyandottes being seventh. The tenth of the series was on an entirely different plan and was designed to test the relative value of complete confinement during the winter months and the exposure which birds would have in a limited run and an ordinary small house, four feet by four feet. Twenty pens competed in each section, for which there were over 100 entries. In the scratching shed system the best total was 174, from Golden Wyandottes, Buff Rocks being second with 150 eggs. In the open runs the birds laid much better, Buff Orpingtons being first with 237 eggs, Partridge Wyandottes with 218, Buff Orpingtons and White Wyandottes taking the prizes in this as in the scratching shed.

The eleventh contest was held in Surrey and attracted less attention as it had been arranged to run a competition extending over twelve months, and as the two competitions were running concurrently the four months' was dwarfed somewhat by its larger and more pretentious rival.

The first competition extending over a period of twelve months was held in Essex, commencing on October 1st, 1907, and finishing on September 30th, 1908. The conditions governing this competition differed considerably from those governing the four months' competitions. Six pullets composed a pen and the prizes given were for value and not for number of eggs laid. There seemed to be a large popular demand for this extended competition, but the heavy entrance fee possibly prevented many coming forward, and the entries obtained were, unfortunately, not representative of all the varieties of fowls kept for egg production. No Buff Orpingtons, Silver Wyandottes, Black Leghorns or Minorcas were entered, but White Wyandottes, White Leghorns and Buff Rocks formed a large proportion of the entries. Twenty pens competed and at the finish it was found that White Wyandottes occupied the first five places and Buff Rocks the sixth and seventh. White Leghorns were ninth, but three pens of the same variety were very near the bottom.

Two pens distinguished themselves by laying over 1,000 eggs, and five birds—three Buff Rocks and two White Wyan-

PLATE NO. 59



Pure (Croad) Langshan Pullet.

(*The property of Mr. Charles Murton, Whitehouse, Newton Flotman, nr. Norwich.*)

Winner of 1st Crystal Palace; 1st Cambridge, 1907; 1st Leeds; Reserve Crystal Palace, 1908, etc.

dottes—laid over 200 eggs each, the highest total being 216. The records of some of the birds were correspondingly low, many of them producing less than 100 eggs.

During the progress of the contest it was ascertained that three of the birds were physically unable to lay, which would seem to indicate that in most flocks of fowl there are birds apparently productive, yet yielding no eggs. The trap nest is the detective which runs all these useless creatures to earth.

For several years the Burnley Utility Poultry Society have conducted a four months' competition on the same lines as the parent society. The entries have chiefly been made by the members of the society and some good records have been made, but in comparing the results attained with those of the club it must be remembered that, being reared locally, the birds are already acclimatized and that they can be transferred from their own quarters to the venue of the competition in a few minutes—which enables them to settle down to their new quarters at once.

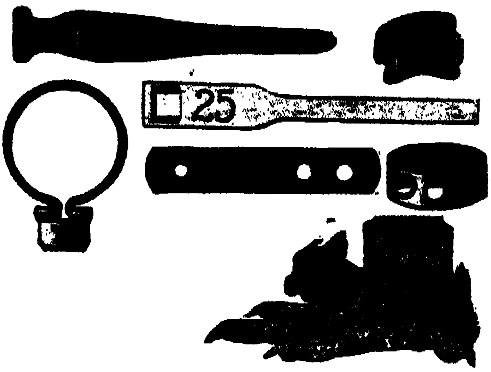
Laying competitions on an elaborate scale have been organized in Australia, where there is apparently no lack of money for such enterprises. Notable results have been obtained, results which are not likely to be exceeded or even equalled in this country. Canada, United States, Cape Colony and New Zealand have also copied the example set by the Mother Country, and there is no doubt that the fecundity of the hen has increased considerably as a consequence, for succeeding trials obtain a larger number of eggs.

LAYING STRAINS (*see* "Breeding").

LECTURES (*see* " Instruction ").

LEG. The scaly part below the hock.

LEG BANDS. These are among the most useful appliances of the poultry yard. By their adoption the breeder of exhibition fowls can ascertain at a glance the age and pedigree of any particular bird he possesses. The number and date engraved on the leg band is registered in a Stud Book, so that should the bird wearing such prove valuable, or worthless, as a breeder of show specimens, it can be either retained or discarded. Leg bands are also a great boon to the utility poultry keeper, whose chief aim is egg production. By the use of leg bands consecutively numbered, and by the use of trap nests, he can weed out the drones from among the profitable egg producers. By recording the number of eggs laid, those birds showing the best averages can be retained for breeding purposes, so that a high standard in the stock may be maintained. There are several kinds of leg bands in use. Some are in the form of a wire ring, which is split for the purpose of springing it on to the leg. The ring has a tab numbered and date attached. Others are in the form of strips of metal which are bent round the leg and locked in various ways. The aluminium bands lately introduced, which are adjustable to any size leg are excellent, as they are not only extremely light, but are non-corrodable.



Various Styles of Leg Bands.

LEG-FEATHERS. The feathers growing on the leg, as in Cochins, Brahmas, Langshans, etc., extending down the outer and middle toes of those breeds.

LEG - WEAKNESS. Leg-weakness must be carefully distinguished from cramp. It is due, not to rheumatism, but to hereditary weakness and want of bone substance—a common trouble with chickens, especially those that are not properly fed. Chickens require a considerable amount of bone-forming food. If fed on rice, for example, which contains nothing of the kind, they will merely become heavy in the body and weak in the legs, and the result will be that when a few weeks old they will suddenly develop signs of what may be at first supposed to be cramp, but in reality is leg-weakness, due to want of bone forming substance. It is easy to determine which of the troubles a chicken is really suffering from. If it has been kept in a damp place, and it its toes are turned in and clasped together, it is quite certain that the bird has cramp. If, on the other hand, it simply squats down and seems unable to lift itself on to its legs, then the trouble is leg-weakness only. Cramp (which see) can only be dealt with by external applications to improve the circulation, but the way to deal with a case of leg-weakness is to give the bird stimulants and to alter the system of feeding. The best foods for young chickens are oatmeal boiled up with skim milk, dry, coarse oatmeal or groats and small broken wheat by way of dry food. To the oatmeal and milk should be added about ten per cent. of fibrine meat or crushed bone. Chickens — whether they be well and strong or whether they be delicate—from time to time should have in their drinking water a small quantity of Parish's chemical food, which contains lime and other chemicals which are of considerable benefit in helping to build up the frame of the bird as it grows. In rearing chickens, what is wanted is to give them a good frame to carry abundance of meat later on, and a good frame can only be given by the aid of a little assistance, such as this chemical food will furnish.

One of the commonest causes of leg-weakness in chickens is also want of green food. This happens when they are kept in confined runs and gardens and similar places. It is surprising how quickly chickens kept under such conditions will pull themselves together and begin to thrive when let out into a field. The reasons for this are two-fold. In the first place they get the benefit of the lime in the grass, and in the second place the green-meat regulates the system and enables it to throw off the humours and obstructions which tend to retard the growth and development. Another cause of leg-weakness is want of a proper grit supply—a matter of very great importance in other directions as well.

LEGAL. LAW OF TRESPASS. Poultry are proverbial trespassers, and as such are a constant source of friction between neighbours. The law on the subject is perfectly clear and simple, but the same cannot be said of the means available to an injured party for asserting his right to compensation for the result of such trespasses. The law generally applicable to the ownership of animals covers the case of poultry; and that, in effect, is that a man who is the owner of animals must keep them on his own land, and if he does not do so he will be liable to compensate his neighbours for any damage they may suffer in consequence of his neglect to perform the duty he owed to these neighbours. In fact, trespass by live stock comes under the heading of negligence in this sense that the enforcement of compensation depends upon proof that the damage complained of was brought about by negligence on the part of the person whom it is sought to charge with it. If, therefore, A keeps poultry, and does not sufficiently fence them in, by reason whereof they stray into B's gardens and do damage, it is A's neglect to perform a duty he owes towards B (*i.e.*, the duty of securing his poultry) that involves him (A) in liability to pay. There is a widespread notion that the owner of a fence dividing two properties is the person whose duty it is to keep and maintain the fence in such condition as to render these trespasses impossible. That is quite a mistake. It is perfectly true that in a few isolated cases agriculturists who are owners of certain fences are under what is called a "prescriptive obligation" to maintain such fences for their neighbour's benefit; but there is never any such obligation where poultry are concerned. And if A in answer to B's complaint of his poultry trespassing were to say to B (as is so often said), "Well, it is your hedge and you should keep it in proper order so that my fowls cannot come through," that would be absurd. A is the owner of the poultry and the law says that he must keep them at home; the law does not say how he is to do so—it leaves him to find a way of his own. He may shut them up, tether them by the leg, or put a fence up—whichever he likes; but he must so keep them that they shall not cause damage to B.

The difficulty a plaintiff has in a case of this kind is that of proving damage; and where poultry come from several different owners on to his land, this difficulty is intensified. The method of procedure is, however, obvious. Application should be made to the owner of the poultry for an undertaking that the trespasses shall not be repeated and for the payment of the amount of the damage; the latter should be fairly set out in reasonable detail and should be what the plaintiff will be prepared to substantiate on oath if a trial has to take place later. If satisfaction cannot be obtained in this way, the services of a solicitor should be requisitioned and the case be entered in the County Court (which has jurisdiction up to £100), an application being added for an injunction against a repetition of what is complained of. In order to obtain *damages*, proof of the accuracy of the figures must be given as well as proof that the damages were caused by the defendant's poultry, which poultry were not properly fenced in by their owner. It must, however, be added to this that it does not necessarily follow from the fact of A's poultry being found in B's garden that A is liable; it is open to A to prove that he had taken all reasonable precautions and that it was by reason of a tortious act on the part of a third person that the fowls escaped. In that case A will not be liable. In order to obtain an injunction it will be necessary to show that the defendant threatens or intends a repetition of the trespass or that there is reason to fear such repetition.

Distress damage feasant, a summary remedy for trespass by stock, cannot be applied to poultry on account of the technical difficulties attending its operation.

—— LAW OF NUISANCES. Poultry as the subject of nuisances may be dealt with from several standpoints. Trespass (dealt with above) is a nuisance; so too is cock-fighting—or at least the keeping of places where such may be carried on; again, cock-crowing is another form of nuisance; and similarly, under the Public Health Acts, is the keeping of poultry under insanitary conditions. Nor must we overlook the forms of nuisance involved in setting traps, laying poisoned grain, and similar conduct often resorted to by persons with grievances. It will perhaps be well to take these various forms of nuisance in the order given.

Cock-fighting is prohibited by the Cruelty to Animals Act 1849, Section 3 of which provides a maximum penalty of £5 for any person convicted of keeping or using any place for baiting or fighting bulls, bears, dogs, cocks or other kind of animals, domestic or wild, or encouraging or assisting at any such proceeding.

The Town Police Clauses Act, 1847 (which is incorporated in many local Acts) makes provision to the same effect; and with regard to London, the Metropolitan Police Act, 1839, operates similarly.

Cock-crowing. This is an offence, not against any particular Act of Parliament, but against local bye-laws which have the same effect. Thus the Public Health Act, 1891, which may be adopted by local authorities, contains provisions for dealing with this sort of thing; and the Burgh Police (Scotland) Act, 1892, provides that the local authority may make bye-laws for various purposes, including provisions that "cattle, dogs and poultry shall not be kept in such places or in such manner as to be a nuisance or annoyance to the inhabitants."

Keeping poultry under insanitary conditions. All alleged nuisances under this heading can be dealt with under the Public Health Act, 1875 (and the various amending Acts passed subsequently). The procedure is as follows:—Complaint must first be made by any aggrieved person to the local authority; the local authority, if satisfied of the genuineness of the complaint, must serve notice on the occupier requiring the abatement of the nuisance within a specified time: failing compliance, the next step is a summons to appear before the magistrates, who may make an order and also impose a penalty and the costs.

Setting traps, laying poison, etc. These subjects are really part and parcel of the law relating to cruelty. The setting of traps calculated to do injury to human beings is prohibited by the Offences against the Person Act, 1861; and it has been held that, although the Act makes an exception to the case of traps set for vermin, this does not extend to traps baited with meat scented so as to attract dogs. Malicious wounding may be dealt with under the Malicious Damage Act of the same year, which provides a penalty of £20 over and above the amount of damage, or alternatively six months' hard labour, for unlawfully killing, maiming or wounding "any dog, bird, beast or other animal not being cattle, but . . . being ordinarily kept in a state of confinement or for any domestic purpose." The laying of poisoned grain is prohibited by the Poisoned Grain Prohibition Act, 1863, which (as also the Poisoned Flesh Prohibition Act, 1864), subjects to heavy penalties persons who distribute poisoned grain or meal in such a way as to render the same dangerous to life, and unless, when intended for vermin, it is put in drains and other places so protected as to prevent mischief. Similarly the Drugging of Animals Act, 1876, penalizes persons administering or causing to be administered to domestic animals any poisonous or injurious drug or substance without the owner's permission.

——LAW RELATING TO SMALL HOLDINGS. The law relating to the provision of small holdings is contained in the Small Holdings and Allotments Act, 1908—a consolidatory measure in which was bound up all the existing unrepealed enactments relating to allotments and small holdings. The best idea of the measure and of the law as it now stands can be gained by reading the Act itself. It contains over sixty sections in addition to the schedules, and a copy can be obtained from the King's printers for a few pence. As to the obtaining of small holdings by poultry keepers it may be said generally that the law does *not* provide (as seems to be popularly supposed) that any man can seek out a choice piece of land belonging to somebody else and purchase or rent it by the aid of public money; what it does provide, however, is that County Councils and other local bodies shall take steps to acquire land where necessary in order to meet any reasonable requirements of persons wishing to have small holdings and unable to obtain them otherwise. The conditions under which such holdings may be secured by persons needing them are not such as are likely to attract investors who have money available for the purpose; such investors will do well to utilise their own capital, whilst persons without capital should apply to the Clerk of their county or borough or parish council, stating their needs.

—— **LAW AS TO SHOW COMMITTEES AND THEIR LIABILITIES.** The respective rights and liabilities of show officials and exhibitors are mainly dependent upon the terms of the contract between the parties as embodied in the published regulations and on the entry forms. There is no special law on the subject, nor are there many reported decisions directly bearing upon it. The sending of poultry to shows is part of the general Law of Bailments—the "delivery of a thing in trust for some special object or purpose, and upon a contract, expressed or implied, to conform to the object or purpose of the trust." A good deal depends upon the care with which regulations are drawn up, and also upon the strictness with which they are adhered to. Thus, at some shows, exhibitors are allowed to pen and unpen their own birds; this clearly absolves the show authorities from the responsibilities of "exclusive custody" necessary to render them liable as bailees. On the other hand, the show officials are entitled to require the observance of their regulations —which, however, must be reasonable; and exhibitors who do not abide by the regulations are in the position of persons who have broken a contract. Assuming that the exhibitor has complied with the rules and that the show officials are "exclusive custodians" of the birds duly entered, their responsibilities are those of bailees for reward, and they must provide for the proper custody of the exhibits and will be liable for the results of negligence on the part of themselves and their servants or agents (which may include volunteer helpers be it noted). A show committee are not, however, responsible as insurers for the tortious acts of third persons—*e.g.*, thieves, nor are they responsible for disease contracted. The position of the parties to a dispute as to "trimming" is dependent upon the facts and upon the law of libel; whilst the points of dispute in regard to sales of exhibits are governed by the law of contract. Non-receipt of show labels and placing of birds in wrong classes may be the subjects of claims for compensation, but the damages recoverable would not extend to any prospective prize-money; only the expenses of an abortive railway journey, plus entrance fees, could be properly claimed.

LEGHORN. It is to the peninsula of Italy that we are indebted for that branch of our domestic poultry known by the name of Leghorns, a race that has ever since its introduction into England enjoyed the best of reputations for egg production. It is an old reputation, for there is little doubt that when Columella wrote of the small variety of fowls with white ear lobes, as being the best egg producers, he was referring to the breeds of fowls found along the seaboard of the Mediterranean, from which our present-time Leghorns are descended. The wonderful egg-producing powers of these fowls would appear to have been known to the Italians alone in past ages, and it was not until about 1835 that the knowledge spread Westward, for history tells us that in or about that year (the exact date is unknown) a Mr. N. P. Ward, of New York city, received direct from Italy a few Brown Leghorns, which in his hands soon demonstrated their claims to superior merit. Subsequent importations into America took place as time went on, the fowls at this early period being called "Red Leghorns," the name Leghorn probably having been bestowed on them from the simple fact of the vessel which brought the first consignment having sailed from the port of Leghorn direct to America. It appears that a lengthy period intervened between the first importation of the Brown variety and the advent of the White, which, so far as is possible to trace, did not reach the shores of the New World until about the year 1853. The excellent qualities of the breed made themselves so apparent that their fame soon spread, not only throughout America, but also across the Atlantic to England, and in 1870 the first pair of White Leghorns was landed in the United Kingdom, followed shortly afterwards by a second consignment. Two years later, that is, in 1872, the first pair of Browns arrived. For several years these two varieties held undisputed sway in our land, but there followed in quick succession the introduction of the English-made Piles and Duckwings, the Mottles, the Blacks, the Cuckoos, and in 1888 the Buffs came to us from Denmark, the latest addition to the race being the Blues.

The qualities of the true original Leghorn cannot well be over-estimated, as the chickens are robust, grow quickly and consequently soon come to maturity. The hens lay exceedingly well and are non-sitters. The cockerels killed when young make very toothsome dishes. The whole race has one great advantage, and that is, that they are small feeders, so that the cost of keep is much less than in the case of any of the larger breeds of poultry. Leghorns are particularly hardy, being little affected by atmospheric changes, and though naturally doing best when allowed free range, they thrive well in confined spaces.

The general characteristics of Leghorns should be identical in all the varieties or colours, all possessing a light active appearance, very smart in their movements, always on the alert, and with particularly keen eyesight, all these features being common to male and female alike.

The points requisite in the cock are that the head should be deep, but not too long, beak rather long and straight of a yellow colour, though horn colour is permissible in some of the varieties. The comb single, set firmly on, and extending well over the back of the head, large in size, but not excessively so, fine in texture and evenly serrated. The number of points varies with individual birds, but a well-balanced comb with five points is generally considered the orthodox one. Wattles bright red, rather long and thin, fine in texture. The earlobes well developed, more pendant than round, white and smooth, free from red stains. The neck should be long, nicely arched and well furnished with hackle feathers. The back of moderate length, slightly round and sloping towards the tail. Breast full and carried well forward. Legs rather long and slender, of a bright yellow, toes four in number, well spread out. The tail large and full, furnished with fine flowing sickles and carried well up, but in no way squirrel fashion. The general appearance of the body should be light and very sprightly, being large or broad in front and narrowing towards the tail. The weight of a well-grown and typical cock should be from 6½ lbs. to 8 lbs. The hen is proportionately smaller than the cock, her average weight being from 4½ lbs. to 5½ lbs. Her head should be slightly flat on the top, from which the comb should rise straight up for a little way and then fall gracefully over to one side ; the comb itself fine in texture and evenly serrated. The lobes should be fairly large and smooth, fitting closer to the head than in the case of the male. The neck well arched, the breast full and carried forward. The wings carried closely and firmly to the sides of the body. The tail full and carried up. The foregoing are the characteristics as recognised by English breeders of Leghorns, the American type being much lighter in build and more sprightly in carriage and with smaller combs in both sexes.

——**BROWN.** This is without doubt the most handsome of the whole Leghorn race, the brilliant coloured plumage of the cock and the soft tones of the hen's feathers being most harmonious in effect and pleasing to the eye. To see a flock of browns running on a green sward is a charming sight, the blending of the bright red of the head points, the varied tints of the body colour, and the bright yellow of the legs, relieved by the green of the pasture, form a picture that is not easily forgotten. For the production of high-class exhibition stock, it is necessary to mate up two breeding pens, one for procuring bright-coloured cockerels and the other for soft-toned pullets, as it is not possible to get both sexes of equal merit from a single mating, because as colour and markings are primary points in each and yet differing very materially, they cannot be produced to perfection from the same source. The stock cock required for cockerel breeding must be very bright in colour, his neck hackles golden bay, each feather having a fairly broad stripe of black running down the centre. The back, shoulder, coverts and wing bows should be deep red, almost crimson, the wing coverts a beautiful bluish violet, forming a broad, even band across the wing, the saddle feathers a deep orange red, some few of them having a black stripe similar to the neck hackle, the breast, thighs and under parts a rich glossy black, though generally a few brown splashes will be found close under the tail, the tail a rich greenish black. His mates must have combs of only moderate size; if they are too large, the combs of their sons are liable to be thin and inclined to go over as they come to maturity. The neck hackle should be of a very rich yellow or golden tint, each feather distinctly striped with black; this black should be tolerably broad, but the yellow or golden colour predominating. The breast should be salmon red, the body colour a rather light brown, each feather finely pencilled with black—the wings of the same colour, but with a certain amount of red, or what is commonly called "rust," on them. The tail feathers should be black, some being pencilled with light brown. Such mating as this will produce good, bright-coloured cockerels, but the pullets from this amalgamation will be worthless for show purposes. The birds required for pullet breeding are rather different, inasmuch as the hens should be the perfect specimens, whereas for cockerel breeding it is the sire that should be the ideal.

Brown Leghorn Cockerel.

The pullet-breeding cock should have a deeper golden bay hackle, the black striping broader and more pronounced. His breast need not be so sound, in fact a certain number of brown feathers are a decided advantage. In other points he should resemble the cockerel breeding cock. As previously mentioned, the hens for this pen must be really exhibition birds, that is, they must have large combs and well-shaped lobes, be of a sound partridge colour, with the wings quite free from any tendency to warmth or rust.

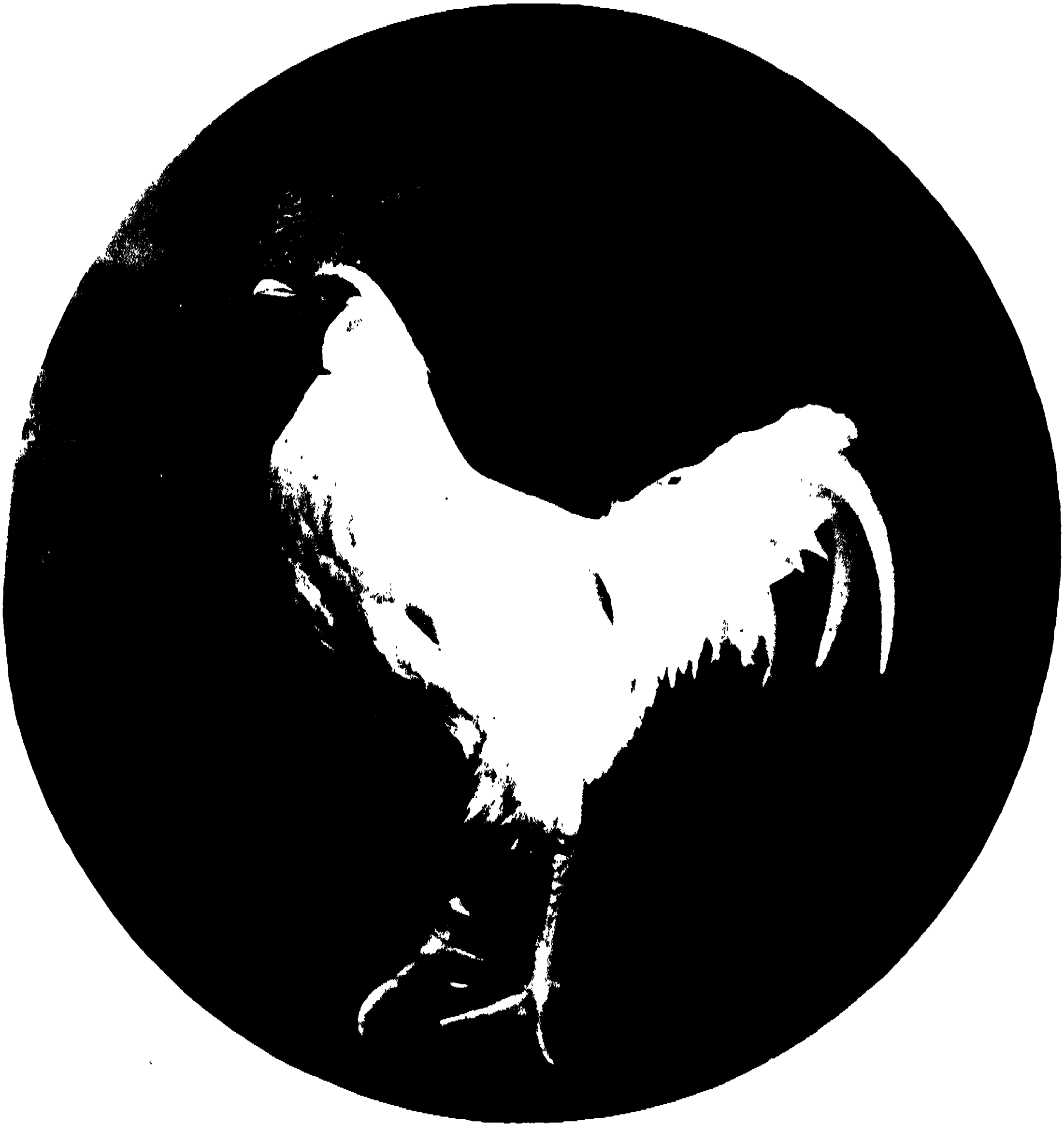
——**BUFF.** The Buffs are undoubtedly of Italian origin, and for many years have been cultivated on the Continent under the name of "Italians," large quantities of them being imported annually into Belgium, Holland and Denmark. Poultry breeders in the latter country propagate them on account of their splendid laying qualities. It was in 1888 that the first specimen of the colour was exhibited by a Danish fancier at the Crystal Palace Show, where its beauty attracted much attention, and ere many weeks had passed several importations of Buff Leghorns were made. Though the hens and pullets were fairly even in colour, the cocks failed very considerably in this respect, yet both were true to Leghorn type. The cocks were almost a cinnamon colour on breast and back, very pale buff in hackle, whilst the tail feathers were white in the centre, margined with an edging of buff, the effect being very striking. This variation in colour and the want of similarity between the male and female was considered to be wrong and various methods were employed to bring about a uniform colour in both sexes—Buff Cochins with scanty leg feathering playing no small part in propagating the earlier specimens of English-bred Buff Leghorns, the effect of which remained for several years, very many chickens hatching with feathered legs and the type of those with clean legs being rather "Cochiny." However, both of these undesirable items having disappeared, we now have birds of a level colour all through, which are certainly more typical in form. The colour should be either a chamois, lemon or orange buff, even all over the body, excepting that the back and breast show greater lustre or richness in tint, the tail being solid in colour. The colour of the cock's plumage always appears more intense than that of the hen, the hackle and back in particular having a gloss on them. The tail with its flowing sickles should be quite solid in colour.

Buff Leghorn Cockerel.

In mating up a breeding pen of Buff Leghorns the plumage colour is naturally *the* point requiring most attention, it being of such primary importance. It is very necessary that the hens should be of a sound even buff all through, special attention being given to the under colour and fluff, which should be buff and not white or greyish white. The uniformity of colour of the progeny depends very greatly on this, as there is always the tendency for the depth of tone to decrease in each succeeding generation. It is always advisable to use a stock cock of rather a deeper shade of colour than that of the hens, better results being obtainable than when both parents coincide in tone.

Though America supplied us with our Browns and Whites, we in turn have furnished our American friends with Buffs, the first Leghorns seen on the other side

PLATE No. 60



White Leghorn Cock.

(The property of Messrs. Whitaker & Tootill, Quarry Farm, Pool, Leeds.)

Winner of 1st Crystal Palace (International) 1907, etc.

of the Atlantic being imported direct from old England.

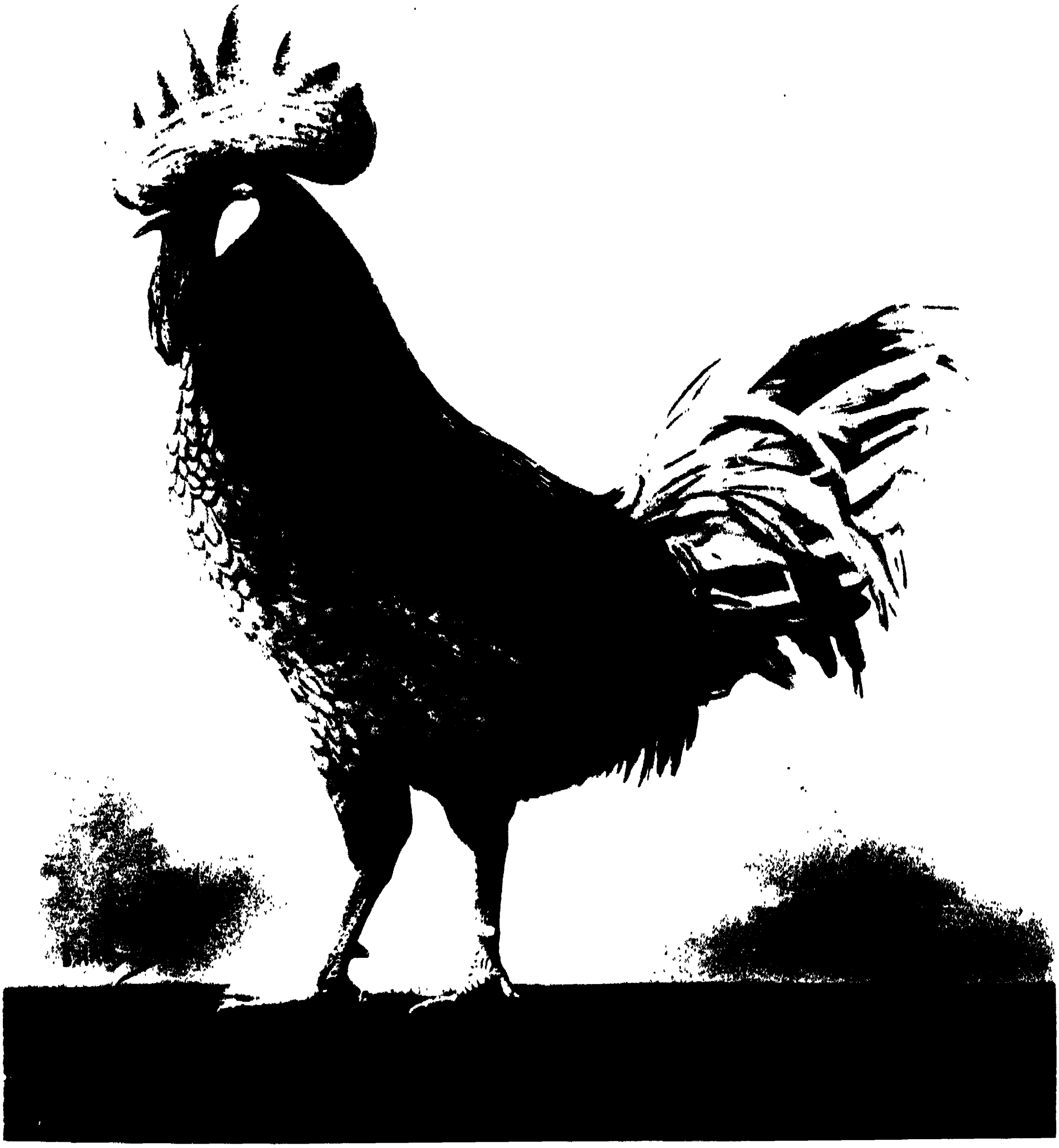
——**WHITE.** This favourite member of the Leghorn family, introduced into England from America about the year 1870, still maintains its popularity amongst the poultry fanciers of the present day. It can justly claim to be in the very front rank of all the Mediterranean varieties of poultry. The chief claim to distinction rests on a sound foundation; not only is it an excellent utility fowl, laying a large egg in great quantities, but the combination and wonderful blending of colour for which the breed is noted, commends the bird to the critical eye of the exhibitor. The Leghorn family, of which the White is the largest, is in no way to be despised as a table fowl. It has certain disadvantages, such as yellow legs, and in some strains a slightly tinted skin, but in other respects it compares favourably with certain recognised breeds, bred entirely for consumption, the flesh being fine in texture, firm and juicy. It is, however, with its egg-producing abilities that the White Leghorn's claim to prominence rests. The breeding of all stock is now pursued on scientific lines, and it is clearly demonstrated when taking a survey of the present-day White Leghorn, that the intelligent application of well defined laws of breeding have been put into operation. The abstract principle based on scientific research can easily be traced, when comparing the stock produced to-day with that of some twenty years ago, and it is to the breeder's art that the logical conclusion is illustrated in the evolution of the White Leghorn as now bred. The breed is an exceedingly hardy and somewhat precocious one, feathering very quickly, and arriving at maturity in from five to six months. Being a hardy variety of fowl it will thrive in almost any climate, and upon all varieties of soils. It is a great forager, exceedingly active, and when allowed a free range will procure most of its own food. It is essentially a fowl suited to farmers, and it is known that cottagers and small holders have long since recognised its worth. If the White Leghorn be bred and kept as a utility fowl purely and solely, the chief desideratum naturally would be the production of eggs. There are now several well-established and recognised breeders, who make this object their chief aim, and it would be economy to purchase a pen of birds from one, and by perseverance and judicious selection to perpetuate this quality. To breed exhibition stock it is necessary to proceed on somewhat different lines. The stock from which to breed exhibition specimens must be true to type. This is the vital point. Then comes colour, which must be pure white, as a White Leghorn ceases to be a White Leghorn of any value unless perfectly white. For cockerel breeding, a vigorous cock, or cockerel, should be selected, possessing as near as possible a perfect head. The comb should be quite erect, firm, and thick at the base. He should have a good open smooth face, free

White Leghorn Pullet.

from any trace of white (which is a fatal defect) and possess large thick lobes, perfectly white, and lying flat to the side of head. The larger the lobes the better for breeding purposes. The bird should be heavily feathered, the greater the wealth and breadth of feather the better. He should be stylish, full of blood and true to type. Mate such a bird to large-bodied hens, well up on leg, and of pure colour. Head points in the hens are not so important as in the cock, but it is necessary that they should possess good prominent lobes, and small, thick combs, rising from the beak perfectly straight before falling over. It is now a recognised fact that head points are influenced by the male bird. To breed exhibition pullets the sire of the pen should be the possessor of a large thin comb, and should the comb fall over it will be no disqualification. He should be as tall on leg as compatible with size and carriage of body, but certainly somewhat taller than the cock used for cockerel breeding, in other respects he should resemble him. The hens for this pen should be extra large, possessing exaggerated head points rather than otherwise, and since it is recognised that lobe is more difficult to obtain in pullets, than cockerels, the hens should be well endowed in this particular point. It must not be inferred that exhibition stock of both sexes cannot be produced from one mating, but it is conceivable that it is more expedient to breed for a specific purpose. The preparation of the White Leghorn for the show bench is not such an arduous task as is commonly supposed. If the chicks have been reared with care, they should come to hand with very little trouble. It is, however, necessary that the stock intended for the bench should be brought up some week or two before the date of the show, and handled as much as possible, but not frightened. An extra diet, including a rather liberal allowance of meat, may be given, especially to pullets, some few days before the show, but with cockerels, if there is a tendency for the comb to fall over, meat should be withheld. It will generally be found, however, that if the birds have been well attended to, that this extra feeding is unnecessary, as a bird in tip-top health does not need it. It is obvious a bird in perfect health must be in the pink of condition, and this is what tells in the show pen, and what should be aimed at rather than extra feeding and pampering. It is necessary, and certainly advisable, to subject the birds for a day or two before the show to a certain amount of training in the show pen. To what extent rests entirely upon the disposition of the birds, but experience in this as in other things soon teaches one. As the show day draws near what appears to the uninitiated a deterrent in reference to White Leghorns is the washing process. This is more of a bogey, however, more dreaded than to be feared. It is comparatively a simple procedure, and an accomplishment soon acquired. Take two large baths of water (two are quite sufficient), one warm and the other with

White Leghorn Cockerel.

PLATE NO 61



Blue Leghorn Cock.

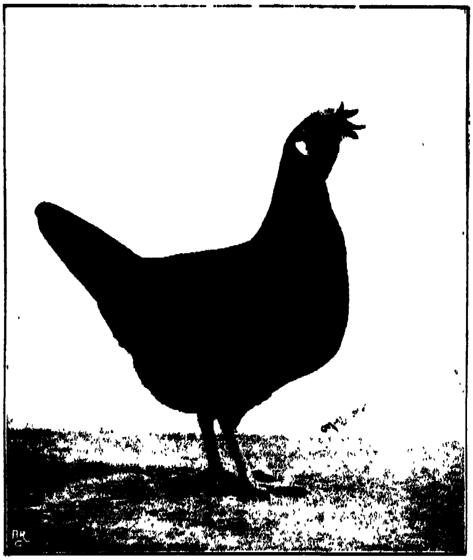
(*Bred and Exhibited by Mr. Richard Cape, Gatewood House, Exbury, near Southampton.*)

Winner of 1st and Special Morecambe; 1st and Special Kendal; 1st Cleator Moor, etc.

(*This bird was subsequently purchased by Mr. Harold Porritt, Netherwood, Grange-over-Sands.*)

just the raw edge taken off. Into the first of these place the bird, and thoroughly soak the whole of the feathers, then with a good soap, such as Sunlight soap, thoroughly lather it, and gently but firmly rub the way of the feathers until you have eradicated all signs of dirt. When you are satisfied all the dirt has been removed, sponge out all the soap you can, and immediately plunge the bird into the second bath and quickly rock it up and down in this until you find all trace of the soap is gone. This process over, again sponge all the remaining water out of the feathers, and place the bird in a hamper, partly lined to keep all draughts away, in front of a good fire. As occasion requires, and the bird dries, the feathers should be smoothed down the way they should go with a silk pocket handkerchief, which brings a certain amount of gloss to the plumage. It is quite unnecessary to add any ingredients to the water you use; if a bird is white it will remain white, but if straw-coloured, whatever substance you may add to the water it will not alter it. It is useless to exhibit the very small birds at the present day, such as graced the show pens twenty years ago. The breed has made such strides of late years that size in conjunction with type and other points plays much too important a part in calculating the worth of a specimen, it being taken for granted and admitted by all that it is much more difficult to breed a good large specimen than a small one. This can be achieved by judicious selection of stock, and feeding on such foods as are known to promote growth. A careful study of the various dietetic properties and food value of the various cereals will be time well spent. There is, however, one cereal that should be given to all white fowls with the greatest moderation, and that is maize. (*See Plate No.* 60.)

——**BLACK.** To the unearthing of this variety from its native lair we are again indebted to American enterprise, for it was in 1872 that Black Leghorns were first imported into America direct from Italy. This breed does not appear to have received much attention from fanciers at first, but after a few years they were cultivated with considerable zeal, until now they can be classed amongst the most favoured breeds of poultry. Their introduction into England is a matter of conjecture, for there appears to be no reliable record to refer to, but over twenty years ago the writer was invited to inspect a pen of Blacks belonging to a fancier in one of the suburbs of London, and he can well remember that the birds he then saw were sound in colour, though small in size, yet possessing true Italian type. This variety seemed to lie dormant for a considerable time, as it was only occasionally that they were exhibited, and even then they were of moderate quality, but almost suddenly they boomed forth and in a very little while they secured a popularity which they retain to the present day. Undoubtedly they are a particularly useful breed, their sombre colour well suiting them for being

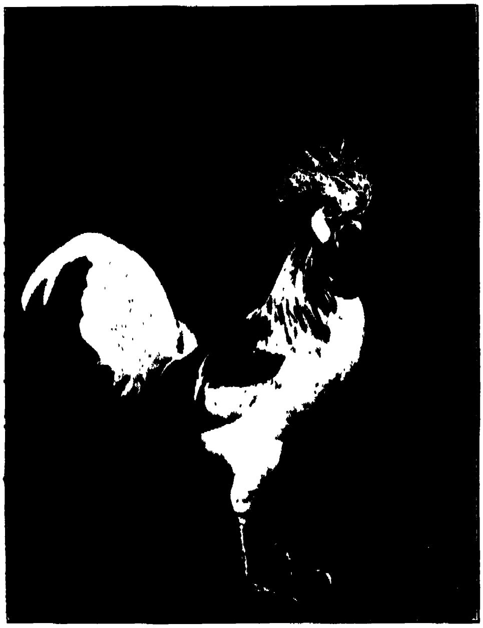


Black Leghorn Hen.

kept in small enclosures in or near large towns, whilst they thrive to perfection in an unlimited range. They possess an undeniable reputation as egg producers, whilst they are very hardy and robust in constitution. The head points of both cock and hen should be exactly the same as with all other colours of the Leghorn family, as well as the body carriage and type generally. With Black Leghorns there are two very serious faults to contend against, these being discoloured legs and the great inclination of the sickle feathers of the cock's tail to become white near the base. The leg colour was a great source of trouble in America some years ago, the standard being altered several times. First it was decreed that the legs must be yellow, then it was changed to black, which was altered later on to yellow or yellowish black, as it was considered that with black legs the birds too closely resembled Minorcas. In England the standard rightly insisted on is yellow. The prevalence of white in tail of the male is a matter that will never be entirely eradicated, as there is always the tendency with all black breeds to show the "white feather" now and again. The plumage colour in both sexes should be of a rich blue black with as much sheen as possible, this being more perceptible in the cock than in the hen. In mating up the breeding pen, care must be taken that all the birds should be solid in colour right through to the skin, but if this is not possible then those birds, especially the cock, with the minimum of white should be selected.

——**CUCKOO.** Cuckoo Leghorns were of pure Italian origin when first introduced into this country, but unfortunately alien blood has been infused, with the view of improving both colour and markings, so that the present generation has lost something of the original type and style. In point of size they are rather smaller than the other varieties. Their somewhat limited popularity is due to the difficulty experienced in producing good, even-coloured and well-marked cockerels, as a large percentage come too light in shade and indistinct in barring; they also have the fault common to all breeds of similar tones of throwing white or partially white feathers in the tail. The pullets are easier to get of the desired shade. The markings consist of bands of dark blue on a ground of light grey or almost white, The shades vary greatly, sometimes the bands being nearly black on a grey ground, other times the blue bands being on a white foundation, but the two shades should not be pure black and white. In mating up the breeding pen it should be remembered that the best results are obtained by using a medium light-coloured cock and rather dark or medium dark hens; but if only a very light-coloured cock is available, then the hens should be decidedly on the dark side, it never being advisable to match a very light cock with very light-coloured hens, nor an extremely dark cock to hens of the same tone as himself. This variety is known in America by the name of Dominique Leghorns.

——**PILE.** This variety is of purely British manufacture, having originated by the crossing of Brown and White Leghorns, and it made its first public appearance in 1886. They are a very handsome and attractive race, the combination of the various colours making a pleasing effect. In general characteristics they resemble all other Leghorns, the difference being simply the plumage hues. In the cock the hackle is of a chestnut red—the back a deep chestnut colour becoming almost of a claret shade under the hackle. The saddle feathers are chestnut, the shoulder coverts violet red, the wing bows a more bricky red, the wing bar white, faintly laced with chestnut. The breast is a pure creamy white, each feather, especially on the throat, laced with pale chestnut. The tail is white or pale creamy white. The hen is not nearly so brilliant in tone; her hackle should be a pale chestnut with a faint trace of white in the centre of each feather, the back creamy white, very slightly laced with chestnut. The wing coverts are similar, only the chestnut colour is a little more intense. The breast is a very rich chestnut, starting from the throat, the colour becoming paler till it fades into creamy white in the under parts. The tail is as nearly pure white as possible. The difficulty in breeding Pile Leghorns is the tendency of the breast and tail colour of the cock to be too creamy.



Pile Leghorn Cock.

——**DUCKWING.** Duckwings cannot be said to be pure Leghorns, having been made by the crossing in of alien blood with the Leghorn, the medium used being a Japanese Phœnix of a silver grey colour. This amalgamation had the effect of fixing the colour desired, but it left its mark of the long sweeping sickles of the Phœnix for a considerable time, and even now, after twenty years of most careful breeding, traces of the long tail can be seen in many of the cocks, the sickles being much longer than in any other variety of Leghorn cocks. However, Duckwings are now pretty well established, and with the exception of the above-mentioned point, breed true to colour and are fairly typical in structure. The brilliant colour of the golden cock and the soft silver grey of the hen form a charming contrast. To breed both to perfection it is necessary to have double mating, for the pullets of Golden variety are practically useless for exhibition purposes, as they are generally too warm on the wing and too dark in body colour. On the other hand, equally good cockerels and pullets are produced from the silver grey mating, only the silver cockerels are not as fashionable as the golden. The Silver cock's hackle should be silvery white, quite solid and free from black striping, the back and shoulder coverts and saddle being of the same colour; the wing butts, metallic black, the wing bar a rather bright metallic dark blue, the secondaries white; breast and tail black, the latter having a gloss. The hen's hackle should be silvery grey with a broad stripe of black running down the centre of each feather; breast a rather light salmon colour, the shaft of each feather showing white down the centre; the body colour grey with slight trace of pencillings, tail rather darker grey. The mating of birds of above colours will produce chickens of both sexes of equal merit, though now and again a few of the cockerels will throw partially coloured feathers on the back and wings. The Golden cock is admittedly the more striking in appearance, the light yellow or straw-coloured hackle, the light maroon or bright golden of the back and the metallic blue of the wing bar relieved by the dense black of the breast, under parts and tail forming a most effective contrast, yet harmonious combination. The hen required for mating with the *golden cock differs from the silver hen* in density of colour, being somewhat darker all through. Her breast should be a deep salmon red, her back a dull grey pencilled with fine markings of a much deeper colour, wings of the same colour with a tendency to redness; her tail a very dark grey, the whole appearance of the plumage lacking the softness of her silver sister. Duckwing hens are excellent layers of very fair sized eggs, but they inherit from one of their ancestors a certain amount of broodiness and some of them when allowed to sit prove careful and attentive mothers.

—— **BLUE.** This variety has been brought into great prominence of late and is thought by some to be of quite modern invention. This colour dates back a good while, for it is within the writer's recollection that a few were bred some years ago, simply as an experiment, but they then failed to "take on," and consequently fell into the background, though one or two pens have always existed in a secluded spot until unearthed a comparatively short time ago. They are supposed to have originated in a cross between the Black and the White Leghorn, but as these colours, if they can be called so, when amalgamated give a slate colour, the true blue which is so much desired has perforce been obtained by crossing with another breed, hence the density of lacing so conspicuous in many specimens. Though a standard has been drawn up for Blues, it is only natural to surmise that as time goes on it will require modification, as the variety is too immature to really fix any hard and fast rule at present. That the colour should be blue and free from lacing is certain, but a degree of latitude will have to be allowed, until the breed is thoroughly established. As to their qualities little can be said, except that so long as they are produced from a Leghorn cross pure and simple, they should equal the other varieties of the race in every respect. (*See Plates Nos.* 61 *and* 62.)

LIBERTY, FOWLS AT (*see* "Accommodation").

LICE (*see* "Parasites").

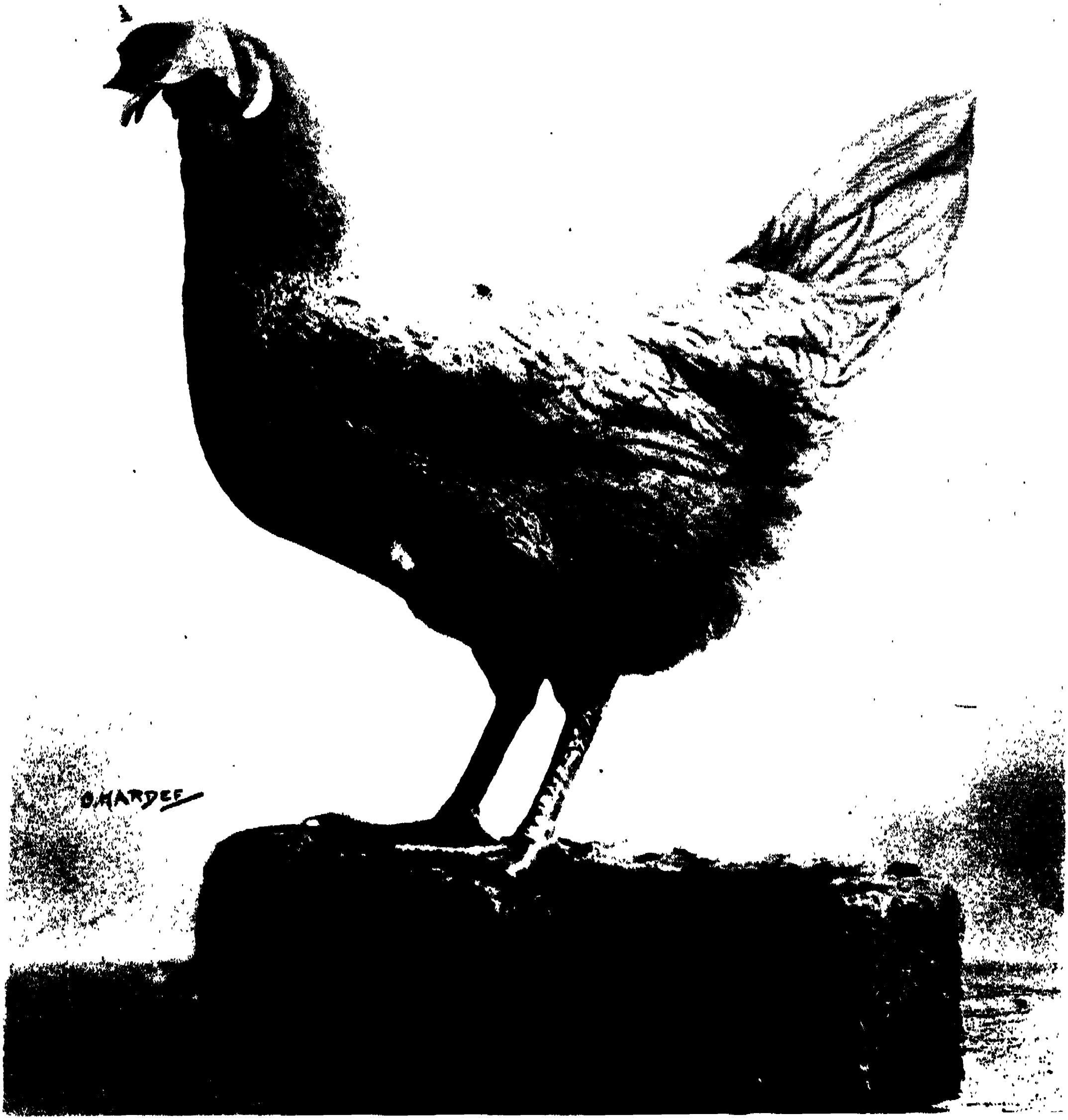
LIME. Lime is a very useful substance in the poultry-yard, notwithstanding which many people do not realize where its uses come in or just how important it really is. For laying hens it is a necessity, providing material for the egg-shell, and for fowls in confinement it is a virtual necessity, supplying many of the needs that are felt under those conditions. Again, a dressing of lime on land that has become foul has an immediate and permanent cleansing effect. Thirdly, no poultry-house is safe from vermin pests, unless painted with limewash (or something equally effective). And fourthly, lime-water makes an excellent egg-preservative. It will be seen, therefore, that lime in some form is practically an indispensable factor in poultry-keeping.

One of the commonest puzzles with which novices are confronted arises when their hens lay soft-shelled eggs. It is seldom suspected that the cause may be lack of lime; nevertheless, such is almost invariably the case. Again, when a pullet is lame, yet no injury to the foot can be discovered, lack of lime is never suspected as the seat of the trouble. In each case a liberal supply of oyster shell will generally effect a cure. Lime in a cruder form may be found necessary, in which case it can be given as pounded mortar thrown down in the run.

To destroy decomposing matter that may be adhering to the oyster shells, it is often advisable to calcine them. This is done as follows. Place the oyster shells in lime in a galvanised iron pail, slake the lime, cover the pail, and leave them thus for forty-eight hours. Then expose them to the air when they will be ready for use.

—— **FOR CLEANSING FOUL LAND.** Land that has become very foul through overstocking—small yards and grass runs so

PLATE No. 62



Blue Leghorn Pullet.

(*Bred and Exhibited by Mr. Richard Cape, Gatewood House, Exbury, near Southampton.*)

Winner of 1st Crystal Palace (Grand International); 1st Birmingham; 1st and 3 specials Morecambe; 1st and Specials Kendal; 1st Tonbridge; 1st and Special Cleator Moor, etc.

(*This bird was subsequently purchased by Mr. Harold Porritt, Netherwood, Grange-over-Sands.*)

often do—can be cleansed by a dressing of powdered gas lime, at the rate of a pound to the square yard. A more drastic method is to use fresh boiled limestone lime, ten tons to the acre. This should be placed in heaps, slaked to the usual fine powder, and spread over the surface of the run. The fowls should, of course, be kept off, not only while the work is in progress, but for ten weeks or so afterwards. In the case of a small backyard, where a deodorizer only is required, it is a good plan, if lime or builders' works are at hand, to purchase powdered lime (which costs usually 1d. a bushel) and put it down some two inches deep.

LITTER. The uses of litter are manifold. It provides a medium for scratching exercise and diversion in scratching for hidden corn, it maintains warmth under foot, it prevents many diseases of the feet and legs, and it forms a valuable part of the poultry manure. This last is, of course, most potent as a fertilizer in its pure state, if kept dry; but most gardeners prefer to use it with a percentage of other matter—an adulteration which will reduce its strength and render it more generally useful. And poultry manure is uch a valuable asset these days that one must be careful in choosing a litter which will not make the manure less useful as a fertilizer. For instance, sawdust is sometimes spread thickly about dropping-boards and floors. It is an excellent deodorizer, we know, but it contains little for the plant which the manure should go to feed. Then there are shavings, which is the same thing in another form. Both these spoil the manure from a horticulturist's or farmer's point of view, and to the land they do more harm than good. But there are plenty of good litters without going in for such substances, the most popular of these being peat-moss. This is a vegetable-mineral product, is very warm and comfortable, and a good deodorizer. If laid down in a scratching-shed to a depth of 8 inches, it will last for three or four winter months, if turned over occasionally; and, needless to say, it forms a most valuable addition to the manure. To the poultry-keeper the broken or "granulated" kind is the most suitable. Of course, even peat-moss has its drawbacks, and one of these is its porous nature, which renders it capable of soaking up moisture like a sponge. Wherever it is used, thorough dryness must go with it, or the results will be worse than with most litters. And one may say, in passing, that no litter, whatever its virtues may be, is of any use whatsoever in a damp or leaky house. The floor and the roof of the shed, or whatever it may be, must be considered first, and the litter afterwards.

Many poultry-keepers find it more economical to use litter which they can procure for themselves rather than purchase it, and there are many products of the land which come in most useful in this respect. There is the refuse chaff or husk which the threshing machine discharges. There could be nothing more desirable than that in the scratching-sheds. Then, in the autumn, fallen leaves may be collected and stored for winter use, and they make an excellent litter, enhancing the value of the manure very considerably for many garden uses. There is bracken-fern, again, which, if cut, harvested, and stacked, may be put in the same category with leaves, but it is the better for a coarse chaffing before use. Short straw or old meadow hay are also good, but they must be short, and, for small houses or appliances, such as cold brooders and foster-mothers, they should be chaffed and mixed with a little dry earth. This last, in itself, is a good litter for summer use; and so is sifted ashes. Both may be advantageously used as a foundation for the bracken, leaves, and such-like, at any time, and then the birds will have something to dust themselves in when so inclined. These remarks, of course, apply generally to utility poultry. When selecting litter for exhibition stock, one has to consider matters in a somewhat different light. For example, a breeder of Cochins, or other feather-legged birds, would never dream of allowing his birds to scratch about in long litter, for it would most effectually spoil the foot-feather. On the other hand, the legs of a clean-legged fowl would be improved by exercise among long straw and such-like. And the bantam breeder would never think of littering his sheds with leaves, which would nearly bury his pets.

LIVE HEN MARKETS (*see* "Marketing—Surplus Stock").

LIVER DISEASE (*see* "Tuberculosis").

LOCAL POULTRY SOCIETY, HOW TO FORM. Although there are a great many flourishing local societies devoted to poultry there is always room for more, and no doubt much is done by their aid to stimulate and encourage the industry. The formation of these societies is mainly undertaken under the auspices of one or another of the large organizations with head-quarters in London, the most important of which is the National Poultry Organization Society. Assuming that the promoters' object is the formation of a utility poultry club the procedure would be to communicate with the secretary of the last-named Society and state that they desire to form a local Society and be affiliated with the London office. If they wish to combine for selling their eggs, this is far and away their best method of proceeding; but if for any reason they wish to be independent of the N.P.O.S., then let them begin by calling together a gathering of poultry-keepers interested in utility poultry-keeping. Perhaps their ultimate aim is the holding of a laying competition on the same lines as the Utility Poultry Club, or they wish to combine to develop the table poultry industry. At any rate, a meeting must be called. The first thing to do is to propose a chairman, and this had better be arranged beforehand, for business will proceed more harmoniously if the assembly is of one mind as to who shall take the chair. The chairman having been proposed, seconded and elected, we will suppose *nem. con.*, he will make a short speech—good chairmen always make short speeches, thus showing a good example to members—setting forth the reason of the assembly, and concluding by formally moving that the Society be formed. This being naturally agreed, the next thing is to elect a secretary. A good secretary is even more important than a good chairman—he is the useful while the latter is the ornamental member. The chairman should be socially of importance, while enthusiasm is a most important qualification for a secretary. The rules should be as few and brief as possible—those of the Utility Poultry Club and the N.P.O.S. can be taken as a guide. The subscription should be a yearly payment, and the amount should not exceed half-a-crown.

The secretary will, of course, be "Hon. Sec.," which means he gives his time and his trouble free, without remuneration. His first duty will be to receive the half-crowns of fellow-members, for he is generally treasurer as well, and start soliciting subscriptions from local notabilities. It will be his duty to secure a president, vice-presidents and patrons. It is true that he has a committee to help him—this committee is elected directly after the secretary—but, as a rule, all a committee man does is to pass resolutions "instructing the secretary to," etc., etc. The latter bears the burden and heat of the day. The president, vice-presidents and patrons will all be ladies and gentlemen of local standing who will subscribe to the funds of the Society. For collecting subscriptions a smart secretary will make personal appeals to likely subscribers—if he relies on printed circulars he will not get much money.

If the ambition of the Society is to hold a laying competition, the selection of the manager of it is of supreme importance. He must have entire charge of the birds, and must be a man who will so conduct it that any suggestion of unfair treatment of the competing fowls will be, on the face of it, absurd. He should make monthly reports to the committee. If, however, the Society is merely formed to further utility poultry-keeping in the neighbourhood they should hold frequent meetings, at each of which a paper on some poultry topic will be read, and a discussion follow. We are presuming the existence of a suitable meeting-place—most villages have a parish room for assemblages of this kind. Meetings on licensed premises are to be deprecated. The chief feature of each meeting should be the reading of the paper. It is just as well that, whenever possible, some well-known poultry-keeper be secured for this purpose, rather than an ordinary member. A good chairman will make the discussion following the reading the most interesting part of the meeting. His duty will be to cut short loquacious members who have nothing to say and take a long time to say it, and to keep discursive members to the point. Such meetings add to the general knowledge of poultry-keeping of each individual member.

If a few poultry-keepers wish to form a Society to further the breeding of a particular sub-variety—each recognised breed has already its own specialist club—the simplest way is to write to the poultry Press and suggest it, the writer tentatively naming an hon. sec. *pro tem.*, to whom correspondence on the subject should be addressed by those interested in the movement. A meeting should be arranged at some forthcoming show. In specialist clubs the members are usually scattered all over the country, and only meet once a year. The secretary will have a good deal of writing to do and some trouble in getting members to forward their yearly subscriptions. Special collections for cups will also be started. Certain shows will be supported by monetary contributions in return for a generous classification and a club show held once a year at one of the principal shows. At such a show it is a point of honour for members to send their best birds, and to support it by a large entry. A specialist club can do wonders in popularizing its speciality—in fact, the great success of certain new varieties prominent at shows to-day is chiefly due to an energetic club pushing them for all they were worth.

Lastly, let us consider the case of a local Society whose ambition it is to hold a yearly show. This entails a great deal of preliminary work, and if it is a financial failure—and many are—the debt will haunt the unhappy secretary for a long time, unless he has been fortunate enough to secure a strong guarantee fund. A newly-formed Society should be modest, and start in a humble way the first year. In choosing a date, avoid clashing, as far as possible, with any poultry shows in the neighbourhood, and let the date of entries closing afford time for the almost inevitable appeal for further support and extension of time of closing. The gate-money being an important consideration, select the day of the week for the show most likely to draw the largest number of visitors. All the preliminaries should be well planned and talked over beforehand by the show committee and secretary.

MAIZE (*see* " Feeding Stuffs ").

MALAY, THE. In general outline and character the Malay fowl has features all its own. True it can be classed with the Aseel and the Indian Game, but yet neither of these has the same outline and appearance as the Malay. That it is a very old breed no one can deny, and of its origin opinions differ. In the very early part of the nineteenth century it was mentioned in all books referring to poultry culture, but also in conjunction with other birds of an entirely different character. At this time it was extensively bred and was among the most popular varieties up till the advent of the Cochin, when it lost a great deal of favour, and though revived on occasions since, has never regained its old place in the heart of the fancy. As an exhibition fowl it has lost a lot of ground and is seldom seen at any of the smaller shows of this country. The points of character and contour are such that few all-round judges ever follow them, and are consequently very loth to put them "in the money" should one be found in the variety classes. In general appearance the head is similar to the Indian Game, excepting that the comb is almost flat and round and comes well to the front of the head, and the bird has a beetle brow, which gives it a very sullen expression. The more brow the better, for then it does not show much Game blood, which has occasionally been used to get the length of leg. The neck must be long, nicely curved from the head, and though heavily feathered round the top must fall away round the bottom, where the neck joins the body. The bird should show three distinct curves. One from the head and neck, which terminates with the body ; the other from this point to the root of the tail, and then the other from the root to the end of the tail. Each form a symetrical line, without which the Malay character is lost. Though these are points now made much of, they have only been adopted and improved upon since about the year 1870, so that it proves the changes that even the Malay has undergone. In point of size it is open to question whether they have lost ground. Many can be found to-day that are equal in size of body to the largest Indian, but half-a-century ago, they were produced weighing ten and twelve pounds each. The length of leg has increased somewhat, some which have been exhibited the past few years reaching thirty inches in height. The length of leg is a great feature, providing there is with this, big bone, well formed shin and stability of position, any sign of weakness losing many points when on the bench. Like the Indian the feather must be short and hard. So pronounced is this that often the breastbone, the two shoulder points on top of the back and the top of wings will show bare places. Though it may appear to have been worn or the feathers rubbed off, it is the result of producing a short, fine, hard-feathered bird, and shows the points made much of seven or eight years ago. The hen has the same characteristics in head, neck and curves, but seldom shows the bare points on shoulders or wings. Though there are various colours in them the one mostly seen is the Red ; that is, a black breast, with a deep golden neck hackle and a rich blood-red shoulder, or to sum up, resembling a very dark Modern Black Red Game fowl. The hens used with these are the Red Wheaten or Cinnamon-coloured, and they breed very true, and if of good blood will produce exhibition birds of both sexes from the one pen. When the birds are in good form they have a brilliant lustre, and the feather is hard in the hand. Among the other colours of the breed the most striking is the Pile. It is very seldom one sees them now on the bench though they were brought to the front a few years ago. In form they were very good, but in many features fell off when compared with the Red, and probably for this reason did not meet with much favour. Occasionally a White one can be found in the pen, but these are few and far between. All the colours should have brilliant red faces, comb and wattles. yellow eyes, rich yellow legs and yellow beak.

Their chief home is in the West of England, Devon and Cornwall still holding on to them despite all the vicissitudes through which they have passed, but the first stock undoubtedly came from India and the Malay peninsula, and a bird much resembling the Malay can be found through a very large part of Eastern Asia. Mr. Lewis Wright in his "Book of Poultry" makes mention of the fact that some of our largest fowls have come from the East, and in India or China the birds are not fed with the same care as in England, and yet they can produce size as in the Malay, Indian Game and the Cochin and Brahma. A greater portion of their food consists of rice, and though probably with the husk on, it points to the fact that rice is a food that can produce bulk. Though the Aseel, Malay and Indian Game are much of the same nature the Malay is the most pugnacious when upset, or where he does not fancy. In a run he will zealously guard the hens and immediately fly at anything or anybody that dares to interfere. While occasionally they will allow other cocks about a yard, the time may come when a dislike is taken to the bird, and a pitched battle results which can only end in the death of one or the other. They have their peculiarities, and they have their supporters, and with the breed more widely known they would, no doubt, find additions to the ranks of breeders.

MALINES. This is a very ancient Belgian variety, having been bred in that country for many centuries past. It was not until about fifty years ago, however, that it became at all popular, but since that date its progress has been rapid. Its chief value so far as utility characteristics are concerned is the excellent quality and flavour of its flesh, although at the same time the hens are good layers of tinted-shelled eggs. Frequently the eggs are a trifle small, particularly in comparison to the size of body, but this defect is compensated for by the fact that a goodly proportion is produced during the winter months. There is rather too much meat upon the thighs, and the bone is rather heavy for the Malines to be regarded as really a first-class table fowl. The chickens fatten rapidly, and are generally ready for market when about three-and-a-half months old. It is a very hardy fowl, and the chickens are almost able to rear themselves. The Malines fowl is of the Asiatic type, and is large in size, it being no uncommon thing for an adult cock to weigh as much as eleven and even twelve pounds. The body is long, deep, and massive, with a prominent breast and a straight keel. The neck is short, well curved and thickly covered with feathers. The beak is reddish-white, pencilled with black; the eye is orange; the comb, which is single, is red, as are also the face, earlobes, and wattles. The legs and feet are pinky white, and are feathered down the outer side. There are two varieties—the Coucou and the White.

Coucou de Malines.

MALLARD. Although ordinarily used interchangeably with the term "wild duck," the "Mallard" is, correctly speaking, the proper designation of the male or drake. The wild duck, which is generally accepted as the sole progenitor of the domestic varieties, is a wild fowl of very wide and general distribution, and is worthy of some special consideration, both on account of its interest as being the *primitive* stock, and also because of *its increasing* economic value. The wild duck forms no inconsiderable item in our markets, where it finds a steady seasonable demand from those who *realize its excellent table qualities.* For this purpose it is to some limited extent bred in captivity, but more extensively for the stocking of preserves. Wild duck shooting commences with August, and it is more particularly for the requirements of the sportsman that breeding in captivity has assumed commercial proportions. The birds breeding naturally in these islands, although still very numerous, are much less plentiful than formerly, in consequence of the more extensive drainage of their favourite breeding grounds; and there are other obvious causes, tending inevitably to the reduction of wild fowl in a cultivated land.

Broadly speaking, its range extends from the Himalayas to North America. It has been stated to be more widely distributed than any other bird, and however that may be, its range includes practically the whole of the European Continent; North America, extending as far southwards as Florida, and the West Indies; several parts of Northern Africa, and Western Asia; but although it is found in the far north in summer, it regularly turns southward in the cold weather, and finds its favourite habitat in the temperate latitudes, a very favourite winter locality being the European seaboard of the Mediterranean. Large numbers are, however, still to be found during the winter in the Fen districts of England, and many of them form part of the supply of the London markets. They still breed in Britain in a wild state to some more or less considerable extent, not only in the vicinity of lakes and streams, but also in the higher moorland districts.

In the wild state this species always pairs, although under the influence of lengthened domestication it becomes polygamous. Its favourite locality is in the neighbourhood of streams, lakes, marshes, or fens; and its nest is formed of grasses, flags, or sedges, mixed and lined with its own soft down—and it prefers to build upon an islet, or isolated clump of water vegetation. It usually *pairs* in March, and soon breeds, the eggs generally numbering from nine to twelve. The wild duck is a close sitter and takes some pains to conceal her eggs when leaving the nest, somewhat in the manner of geese, a habit which these birds have curiously retained in domestication. In the autumn the wild ducks, young and old, collect into teams and seek their winter quarters, flying in long V-shaped lines, in the manner common to most water-fowl. Relative to correct terms, it may be noted that Folkard (an authority upon wild-fowling) refers to wild ducks when on the water as "a paddling of ducks," and describes the same birds when flying as "a team of wild ducks," or "a suit of mallards.

In connection with the Mallard, there is a noteworthy curiosity of moulting, which is also common to the Rouen (a domestic breed closely resembling its wild progenitor in plumage), and some other varieties in which the plumage of the drake is more strikingly vivid than that of the ducks. This remarkable change of feathering commences at the close of the breeding season, when the male of the wild duck sheds his distinctive plumage and assumes a sadder-coloured covering, closely resembling that ordinarily exhibited by the female. Before the winter, however, he again exchanges his sober colours, and reappears in the magnificent colouring which is so characteristic of his species. The approximate dates of these extraordinary changes of plumage have been given in a detailed description by Waterton, a close observer. He fixes the first appearance of the first moult at about the third week in May, and describes a series of rapid alterations in feathering, until by the first week in July every feather of the former brilliant plumage has disappeared, and the male appears as a somewhat darker-tinted copy of the female. Early in August, however, the new plumage begins to be shed, and the Mallard undergoes a second moult, which is completed at about the second week in October, the bird having undergone the double moult within a space of about twenty weeks.

The duck, at any rate in domestication, appears to have been unremarked by the ancient Egyptians (with whom, however, the goose was accounted a sacred bird); and the same is true of the Jews of the Old Testament time, and the Greeks of the Homeric period. It was, however, mentioned by Columella, in the first century of the Christian era; and Varro, "the most learned of the Romans" (born 116 B.C.), advised the keeping of ducks in netted enclosures, as wild fowl—which is reasonable evidence of the then infancy of the domestication of the species. It may be noted that most of the subsequent references to ducks, in various European languages, until comparatively modern times, refer to the wild and domesticated ducks by the same name—this, by the way, in reference to the common origin.

Apart from the gradual domestication and evolution of the various breeds as we now know them, in our poultry-yards and on our ornamental waters, wild ducks have frequently been domesticated direct from the eggs produced by the birds in their natural wild state, although few reliably accurate records have been kept of the progress of the progeny under domestic conditions. Darwin mentions that in Sweden Tiburtius bred and reared the wild birds for three generations without observing any variation of plumage; and although the colour does ultimately vary, opinions appear to be divided as to the generation at which the variation actually commences. As a rule, however, the birds continue to pair until at least the third or fourth generation, but at some subsequent period they become polygamous, their plumage varies, their gait alters, and they considerably increase in size and prolificacy.

For breeding in captivity, a suitable situation is the primary consideration, and it should reproduce as far as possible the favourite natural conditions, to which reference has been made, including not only shallow water and aquatic vegetation, but dry ground as well. Improving on the old Roman writer's advice, the whole of the breeding ground (and water), must be fenced in with wire-netting to keep the stock within bounds. The initial stock may be either turned down as adults, or a commencement may be made by the acquisition of a setting of eggs, which may be set under a hen or a domestic duck; in any case, the stock birds must be pinioned, or they will soon take to flight. Provided there is a sufficiency of natural shelter, no houses are required, and the birds remain more healthy without; but precautions must be taken against vermin, including foxes, weasels, stoats, rats and hawks, all of which have a natural preference for ducklings

If a house is considered necessary, and hand-reared birds will be accustomed to one, it should preferably be a floating one, or a shed erected upon piles with an opening to the land as well as to the water. At the water side there should be a landing-stage in front, approached from the water by a broad duck ladder. Any description of house used by wild ducks should have one side open and wire-netted, but with a sufficient projection of roof to keep the inside dry. It should also possess a dry floor out of reach of the water, and this must be well-bedded, and constantly cleaned. The openings should be fitted with sliding shutters to confine the birds when it is required to handle them, or nightly for protection, if necessary.

If the initial stocking of wild ducks is made with adult birds, they should be turned down some time in the autumn, or at a sufficient period before the commencement of the breeding season, to enable them to become accustomed to their surroundings before they are due to begin laying. The earlier this is done the more satisfactory will the results be, and it must be remembered that if their progeny will be required for shooting purposes in August, it is essential that they should be reasonably strong on the wing in advance of that time. They should, of course, for obvious reasons, be disposed of before they are able to really fly well. The other method of stocking by rearing on the spot, which is necessarily a more gradual process, involving less expense in the initial outlay, must be commenced by setting and hatching eggs in the spring. In either case, it must be recollected that as wild ducks pair, until they have been domesticated for several generations, there must be an equal division of the sexes. During the laying season, some extra precautions are usually necessary, as regards restraint and the limitation of access to swimming water; otherwise, many eggs will be laid away, dropped in the water, or spoilt for incubating purposes. The eggs should be collected daily, and stored in the usual manner--setting them as soon as possible.

If the enclosure is of a sufficient size, and of a suitable character, no very extensive feeding is necessary to keep wild ducks in good health and a productive condition. When the weather is open, a scattering of good grain in the after part of the day will be enough; but in severe weather a morning meal of Sussex ground oats, well mixed with middlings will be requisite, as it will always be upon a limited range. As a matter of fact, the feeding of the stock birds, as well as of the ducklings, should be practically the same as in the case of the domestic varieties, making due allowance for the fact that wild ducks will, in a suitable situation, find more natural food for themselves, and thrive upon smaller quantities, than the domesticated birds will do. (*See illustration, page* 126.)

MANDARIN DUCKS (*see* "Water-fowl, ornamental").

MANURE, POULTRY. ITS VALUE AND USES. Poultry dung is more often than not looked upon as a waste product and little care is bestowed upon its treatment, but as a matter of fact, an adult fowl produces nearly a hundredweight of highly concentrated manure in the course of a twelve-month. In many instances the greater proportion of this is put to no practical use whatever, being allowed to fall indiscriminately where it will, in yards or upon bare ground, instead of being regarded as one of the most valuable fertilizers we possess. If for no other reason than this the use of portable houses is strongly recommended, particularly when it is realized that a hen produces the amount of manure in a year above stated. This is clearly an additional argument showing the folly of allowing fowls to live entirely in the farmyard, where all the excrement is lost. All successful farmers and market gardeners realize that before they can get anything out of the soil they must first of all put it there, and thus in the keeping of fowls in portable houses, and scattering them about the land, an opportunity is afforded to such men of obtaining a first-class manure already distributed at practically no cost.

When fowls are confined in runs it is a good plan to sweep the earth or gravel surrounding the house once or twice a week, as in this manner most of the manure is collected, which can be stored until there is a sufficient quantity to sell. Not only does such a plan represent greater profit by reason of the sale of the manure, but the land can be more heavily stocked, as the danger of tainted ground is thus largely overcome. The manure collected should be partially dried before storing, in order to prevent fermentation setting in, in which case some of the ammonia escapes. In districts where market gardens exist there is always a ready sale for poultry manure. It is found in practice that a light dressing gives better results than a heavy, as it must be remembered that this manure is in an extremely concentrated form. Before applying to the land it should be broken up finely, and not scattered in lumps. Some gardeners prefer to use it as a liquid manure, in which case it should be mixed with six times as much water.

The following calculations are the result of some experiments conducted a little while ago at the College Poultry Farm, Theale, and show very clearly how valuable a fertilizer poultry dung is :—

ESTIMATED VALUES OF FRESH MANURE PER TON.

	Nitrogen.	Phosphoric Acid.	Potash.	Totals.
Fowl at liberty....	21/0	3/0	2/2	26/2
Fowl in confinement	17/8	2/2	2/0	21/10
Fattening fowl	27/4	2/11	2/2	32/5
Duck	14/7	3/3	1/7	19/5
Goose	6/4	7d.	1/4	8/4
Turkey	12/3	2/0	1/11	16/2
One-month chick .	20/6	1/5	1/9	23/8
Three-month chick .	10/10	1/1	1/1	13/0

ESTIMATED VALUES OF AIR DRIED MANURE PER TON.

	Nitrogen.	Phosphoric Acid.	Potash.	Totals.
Fowl at liberty....	47/11	6/10	4/11	59/8
Fowl in confinement	50/6	6/1	5/7	62/2
Fattening fowl	78/3	8/4	6/3	92/10
Duck	58/10	13/5	6/5	78/8
Goose	33/7	2/11	7/2	43/8
Turkey	44/5	7/2	6/10	58/5
One-month chick ..	66/9	4/8	5/7	77/0
Three-month chick .	43/4	4/4	4/7	52/3

The manure is valued as follows :—

Nitrogen	12/0 per unit (*i.e.*, 1 % per ton).
Phosphoric acid	3/0 do.
Potash	4/0 do.

and from these prices the values are calculated.

MARKET, FATTENING FOR (*see* "Fattening").

MARKET, REARING FOR (*see* "Rearing").

MARKETING. METHODS. The question of how to market poultry and eggs to the best advantage depends entirely on the extent of the producer's business. The word "market" is used here as covering all means of disposal, and this at once introduces us to a vital point in our subject. Let us first take the small producers, among whom we must class the ordinary farmer, who keeps perhaps a hundred fowls, a few ducks and possibly a very few geese or turkeys. Customs vary extremely in different parts of England as regards the management of farming details. In many districts the industrious and thrifty methods are still in vogue, that is to say, that the farmer's wives and daughters do all the work of the dairy and attend to the poultry, and not only so, but also take the produce to market and sell it themselves. Those who do so will certainly make the most profit, for they will produce goods of better quality than when the work is left to servants, and they will certainly dispose of them to the best possible advantage. During the last half-century, however, the ideas of farmers underwent a great change, and over wide areas of this country such a thing as the ladies in a farm house going to market was unheard of. In these cases there are usually no "methods" at all. If any private residents in the vicinity require a pair of chickens they may or may not obtain them by sending to the farm, but the only regular means of disposal adopted in such cases is that of selling to a dealer or "higgler" who gets the poultry at his own price. This class of producers usually regard their poultry as a very unimportant detail of the farm, whose profitableness, or the reverse, is a matter of little moment, and the small amount received goes into the pocket of the mistress as "pin money." These people, as a body, need not be seriously considered in dealing with the subject from a business point of view. There are some thrifty persons among them, however, who would like to make the very best of their produce, but find it most difficult to do so. The wholesale markets are quite useless to them for direct consignment, as in order to obtain full market prices there are certain requirements to be met which they are not in a position to satisfy. The direct supply to private houses in large cities, by means of the weekly hamper, has been much advocated, and the system seems perfect in theory. It has also occasionally been found to answer very well, but more frequently it has led to much disappointment and been abandoned after a short trial. Under the old condition of things, which we may well hope may soon be replaced by a regularly organized system, there seems nothing for the small producer but to sell as much of his produce to private customers near home and to fall back on the itinerant dealer for the disposal of the remainder. Already the co-operative principle is being actively tried in many places, and, in time, may become general. The town salesman, in any case, must always be a vital link in the chain.

——**THE SALESMAN.** The position of the market salesman for any kind of perishable provisions is one of great responsibility and trust. In the course of his business he will be subject to constant worries and anxieties, and notwithstanding his best efforts he will be ever and anon the recipient of indignant complaints from disappointed senders, who are often the only parties to blame for an unsuccessful sale. It should, in justice, be remembered that the salesman has to study the interests and retain the good will of two distinct classes, having to please and stand between the buyer and seller. His customers, of course, are largely composed of the retail shopkeepers, and in all the great centres of population these buyers usually have the choice of many salesmen on whom to bestow their patronage, and they do not forget to play one off against another. Some of them, of course, get into close and regular relations with a first-class firm of salesmen and deal with them every week so long as they are well served, but there are many others who perambulate the markets and haggle over a fractional difference in price, taking every small advantage of difficulties which may arise from such things as bad weather or an unusual superabundance of supplies.

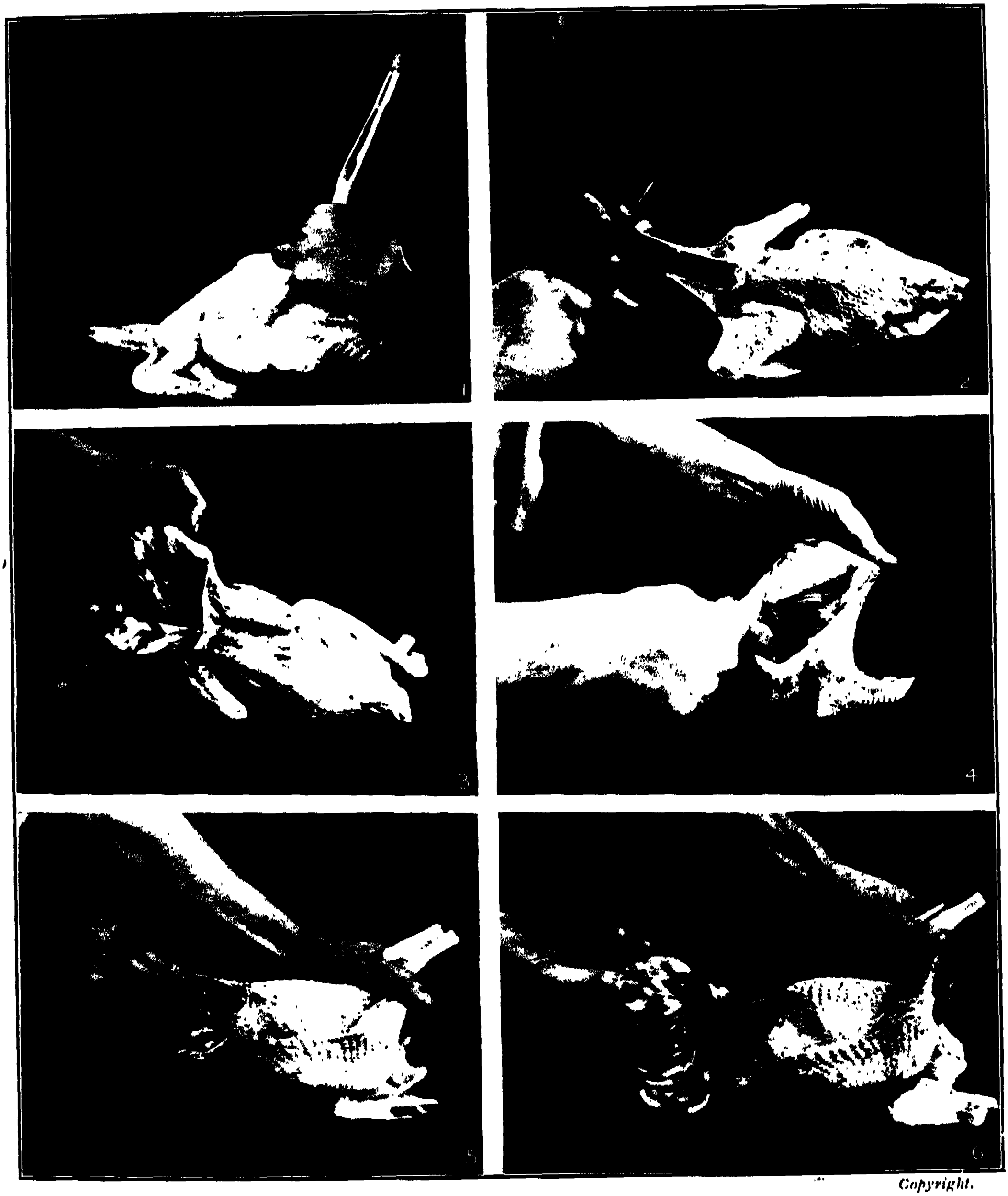
Another class of clients are the hotels, restaurants, clubs, hospitals and suchlike institutions, and among these, who are really consumers, he finds his most valuable purchasers, but they generally are very particular, and their wants must be studied with the greatest care, and those wants are often extremely various.

Perhaps the most serious difficulty of all, with which the salesman has to contend, is the irregularity of his supplies, which it is impossible to furnish without fail at all seasons, with exactly the quantity and quality demanded. British poultry fluctuates in supply more perhaps than almost any article of food, and yet it is always in demand. During the summer and autumn it is usually forthcoming in excess of that demand, while for three months after Christmas supplies are so short, and those of such inferior quality, that the wholesale men are driven to deal largely in imported frozen goods, which they would much prefer to avoid if it were possible to keep up a regular stream of British goods.

Then we come to the terrible bugbear to all town salesmen who receive their goods for sale from long distances—the losses from tainting.

Notwithstanding the use, by the leading firms, of plainly printed directions, the observance of which would prevent, or at least greatly mitigate the evil, many instances occur every summer of consignments arriving which have been caught by the weather, and are found to be more or less unsaleable. Worse than this is the wholesale injury which a sudden spell of sultry heat will often inflict on

PLATE NO. 63



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Marketing—Drawing the Fowl.

1. Drawing the sinews from the leg. 2. Cutting off the head. Note the long piece of skin which is left to cover the front part of the bird when trussed. 3. Taking out the crop (the crop is seen in the hand). 4. The fore-finger being used to loosen the lungs and other parts for drawing. 5. Showing position in which fowl should be held when drawing. 6. Taking the liver, heart, lungs and intestines out all together without breaking.

the general trade of the day, by compelling sales at ruinous prices from the fear of losing the whole. At such times the sender gets a small cheque,, considers he has been robbed, and next time tries another salesman. In this connection it is useless to disguise the fact that all large markets contain a small precentage of unscrupulous men whose business it is to prey upon the unwary, and their methods bring discredit on the salesmen as a body, and the genuine and respectable ones suffer in a loss of confidence on the part of senders. The advent of close, tainting weather is often a favourable opportunity for these black sheep. It is the easiest thing for them to receive, say, a lot of chickens in good condition, sell them at current prices, send almost nominal ones to their clients, and thus make a huge profit, as there is no possible evidence to disprove their statement that they arrived in very bad condition.

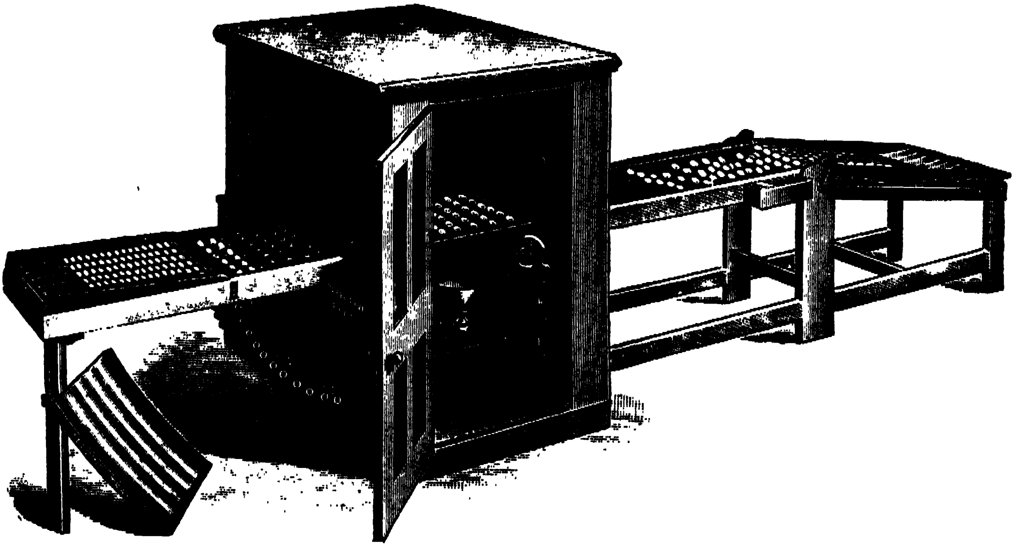
These are a few of the drawbacks to the position of a salesman, and it may be said that in many ways it is no bed of roses. He has to pay an enormous rent for his shop in the market and his outgoings in salaries are also very heavy. Yet with all this there are many who have prospered by means of industry, perseverance and good judgment, above all by scrupulously fair dealing till, after years of honest work, they acquire a reputation far above suspicion.

There are certain men known to the writer who have made a speciality of the trade in new-laid eggs, and have done so with substantial success. Now there is nothing connected with poultry which presents such formidable difficulties as the egg trade, and to obtain a position in such a market as that of London, as a perfectly reliable medium for an article of commerce, the traffic in which has such an evil reputation, is the work of many years. Those who have succeeded have shunned foreign and preserved eggs altogether, and dealt in nothing else (in the way of eggs) but those received direct from country producers, with a strict guarantee that they are really new-laid, *i.e.*, only two or three days old. It frequently happens, at the time of year when eggs are always scarce, that they are unable to supply their customers.

A Case of Badly Packed Eggs.

In that case they simply say they have none, and miss the sale. In the course of time this straight way of doing business finds its own reward and, even in the plentiful season of spring, these men never have the least difficulty in selling out, and almost always at a better price than the current market quotation.

The writer's personal experience of poultry markets has been chiefly connected with those of London, but these probably reflect in many particulars the characteristics of those of all great centres. No doubt, there are minor differences, but the leading principles on which business is conducted cannot be very dissimilar. The enormous population and wealth of London and its suburbs constitute it one of the very best of markets, but it is a very long way short of what it might be made. With proper *organization and extended centres of distribution its powers of absorption might be vastly increased, while it is* constantly and rapidly growing in size. What is wanted is an improvement in the supplies as regards quantity, quality, regularity and classification. Only the very large producer is able to make the best of the London market, and even among these only a certain portion study its requirements as it would pay them to do. For many years the poultry-keepers of England have had before them in the establishments of Sussex and Surrey an example of what can be done to create and keep a market for their produce, but they are only just now beginning to learn the much-needed lesson. Practically the Sussex poultry industry is very well organized, not at all by any cut-and-dried system or the efforts of public propaganda.

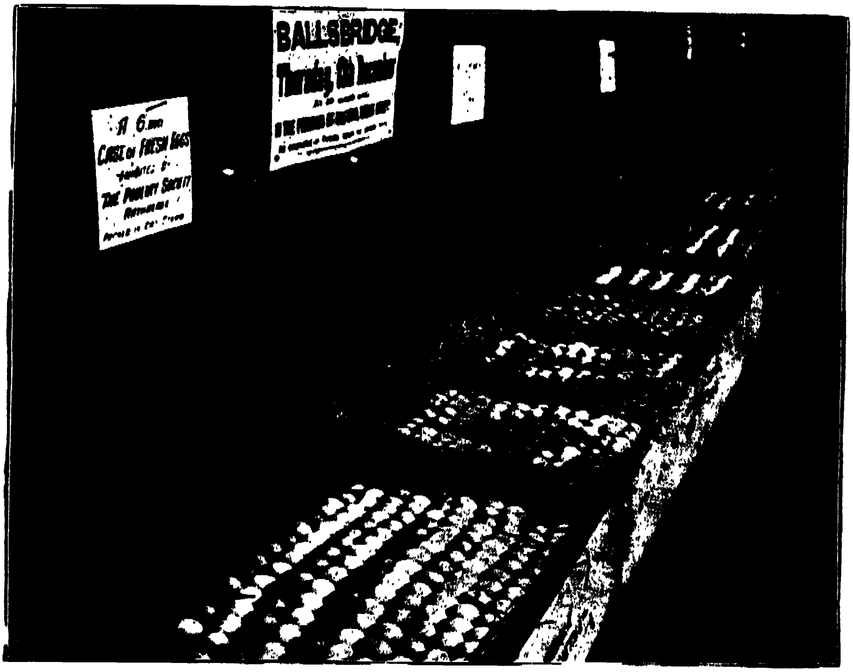


The Lyons Egg Testing Machine.

This appliance is adopted by most of the large Egg Merchants in London and the provinces, and is used to detect black, stale and spotted eggs, thus ensuring for the retail shopkeeper a perfectly fresh and good supply of eggs.

The tester is automatically fed by shooting the eggs off a tray on to a felt carrier. At the bottom of the carrier runs a circulating band of rollers, so constructed that the eggs pass off the carrier in rows of six, into softly-lined egg-shaped apertures formed by the rollers, which carry the eggs into the cabin. On arriving in the cabin the rollers rotate on their own axis, causing the eggs to revolve as they pass over a strong light, either oil lamp or electric. The operator in this darkened chamber is thus enabled to remove all defective eggs as they pass before him on their way to the clearing-table. On this clearing-table there is again a carrier on to which the good eggs are delivered.

The business of rearing, collecting and fattening "Surrey fowls" is one that has grown up of itself, such organization as exists being purely spontaneous and adopted by degrees in the course of years, as circumstances suggested. It has become a good working system, and it would be impossible to estimate what it has done for the London markets. Let us try to realize some of the factors which go to the making of the problem of how best to meet and improve the demand of such a consuming centre as that of the great metropolis and its vast suburbs. From its West End clubs, hotels and first-class restaurants down to the poorest class which ever dream of buying a chicken, there is a descending scale of the kind of goods required, and a corresponding one of value. Nothing but the very best will do for the former, but they will pay good prices for what suits them, and the demand is there all the year round, and many of these establishments send every morning to the market itself, where they expect to find classified goods exactly fitted for their needs. They would certainly not find them were it not for the Sussex fattening establishments, for organized co-operative societies are as yet only in their infancy. The following then, is the salesmen's ideal of a poultry supply for London, which we may hope in a few years to see realized: First a good breed is required, particularly of chickens. Abnormal size is not now desirable for the general trade, although there is still a limited demand (chiefly at Christmas) for very heavy birds, which are sold as "capons," and for which as much as 1/- or 1/3 per lb. is sometimes paid. The most saleable birds are of sufficient but moderate size, fine in bone, with abundance of delicate meat on the breast, well fattened, and with white legs and flesh. Classification is almost as important as good quality itself, and all poultry should be sent up properly sorted and separately packed. Regularity of supply is another urgent want of the trade and this is at present sadly lacking. We do not, of course, mean that exactly the same numbers should be sent at all seasons, because much more poultry is consumed in some



Cases of Irish Eggs Packed in Modern Style.

than others, but alternate periods of glut and scarcity are very great drawbacks. How are we to obtain a radical reformation of the poultry industry of England? This is the problem we have to solve if we are ever to make it what it might and ought to be. Uniformity and co-operation are the only watchwords to describe the means to that desirable end, and so long as the producers insist on individual effort will they remain a house divided against itself and miss the enormous advantages offered them by the best market the world ever saw. In a word, we want poultry and egg depots all over the country to which the smallest producer can conveniently send his goods, and receive their full value after allowing for the cost of preparing them for market. There are many societies now formed for this purpose and a sufficient measure of success has already attended them to justify an indefinite extension of the system.

—— **POULTRY AND EGGS.** In order to make poultry farming a success it is now generally agreed that a definite line of production should be chosen at the start and consistently maintained. This is the day of specialities, and as our different breeds of poultry have largely come to be divided into two classes, *viz.*, the laying and table birds, it is better to decide between them and follow that which seems best adapted to particular circumstances. There is an almost unlimited demand for both poultry and eggs, and the production of either is profitable, or otherwise, according to the amount of practical knowledge, skill and industry brought to bear upon it. Hand in hand with good management and enterprise at home should go the careful study of the best means of disposal when the produce is ready for market. The most successful persons are those who keep a keen eye on the nature of the public demand and arrange, as far as possible, to meet it. Not only is it necessary to produce good quality, but the fancies of consumers, however really groundless they may be, should be considered. The choice of a market is of great importance, but that of the times and seasons for delivery is almost equally so. Many poultry farmers appear to take no notice of the regularly recurring seasons of scarcity and glut, and are too much given to following the beaten track. It is so much easier to produce eggs in spring and table poultry in summer and autumn than at those times when we have to contend with natural conditions, but when the reward is proportionately large. It is a truism to say that we want to have new-laid eggs in November and December, but there are seasons of scarcity and dearness for other articles. These are of annual recurrence, and to provide for them would be a much less difficult undertaking than that of producing winter eggs. During January, February and March well-fattened chickens are always scarce in the London market and make very long prices, but small attempts have as yet been made to hatch and rear at the right season in order to reap a good harvest for the extra trouble taken. Exceptionally fat and heavy birds of the "capon" class also make fancy prices at Christmas, but there are seldom many on offer. Then there are ducklings which fetch 7s. or 8s. each before the regular season begins, but the difficulty of obtaining eggs for sitting is found sufficient excuse for the lack of enterprise shown in this direction. Birds little bigger than pigeons often fetch the above tempting figures, and one might suppose that it would be worth while to obtain eggs from the South of France or even Italy or Algeria in order to secure them. London is a splendid market for luxuries and things out of season, if we knew how to use it to the best advantage. On the other hand, it is a market that is very liable to gluts, which bring disappointment to senders.

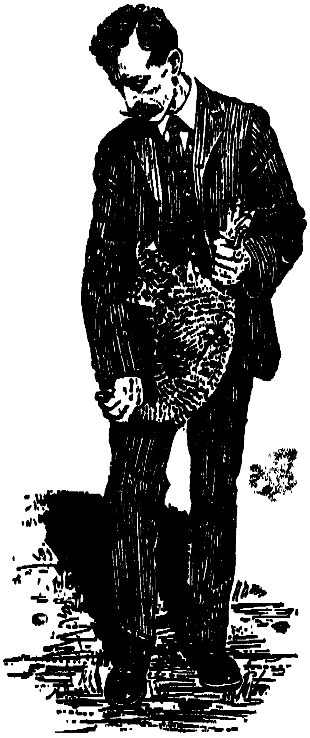
After all, however, though much extra

profit doubtless waits for the enterprising man who will lay himself out to meet the above-mentioned special demands, we have chiefly to deal with those producers whose circumstances compel them to confine their energies to ordinary market supplies as they come naturally in season. Even these might recognise that yellow-legged and yellow-fleshed fowls are not popular, and that, if they send them to the central market or to Leadenhall they must not expect the top prices quoted in market reports. The same may be said of white-shelled eggs. Of course, we know several valuable breeds which lay white eggs, breeds which cannot be dispensed with, and therefore their eggs must come to market. No one need expect, however, to get as much for them as for brown ones, and it is useless to protest that the perference of the consumer is only a silly fancy.

During the last few decades the whole system of marketing all kinds of provisions in London has been revolutionized. The small sender has been practically shouldered out, mainly by the superior methods adopted by the foreigner in dealing with supplies to the wholesale markets. The casual sender of a few couples of chickens or ducks will still get them sold at a price, but dealers do not care for such a spasmodic business, and little lots receive little attention. Salesmen like to receive their birds in lots of hundreds of couples, all properly classified according to size and quality, and, above all, in regular and constant consignments. With such he can deal to the best advantage to himself and suit the demands of the retailers ; and it is only in this way that the best market prices of the day can always be relied on. The small producer is thus heavily handicapped, and

Exhibition of Table Poultry at an Agricultural Show.

London and other great markets are of little use to ordinary farmers or those who keep only a few head of poultry, because they cannot fulfil the above conditions. These must either find private customers or sell to a higgler at what price he chooses to give. The success of the industry in Surrey and Sussex is owing to several causes. It has gradually grown to its present dimensions from small beginnings, and a system of organization has grown with it which enables it to meet the modern market requirements. Here we have our great object lesson, and it is one that is being slowly learned in various parts of the country. Co-operative societies are springing up which receive poultry and eggs from their members, classify and prepare them for market and dispose of them to the best possible advantage. The future of poultry farming in this country depends very largely on the development of the co-operative principle, and it should be the aim of everyone who sees in it a source of income to thousands of our people who badly need it, to do all in their power to encourage its growth.



Showing Method of Killing by Dislocation of the Neck.

——**AGE OF BIRDS.** This varies a good deal, the season at which they are ready for market making some difference; for instance, chickens which are sold in the London markets in May need not be so large as those sold in September or onwards. When the spring chicken is wanted on the market, big prices are paid for very small specimens, providing that they are good, *viz.*, young, quick-grown birds, which have been well fed and put on the artificial cramming at the age of eleven weeks, being got ready to kill when fourteen weeks old, though they may be killed younger than this when the demand is great. Later in the season they are required much older, for without the age, the weight cannot be put on. When chickens are plentiful in the London markets the best birds are about sixteen to eighteen weeks old, and it is these large birds, when well fattened, that command big prices.

——**FASTING BEFORE KILLING.** One great point not to be overlooked is the necessity for fasting of the birds several hours before killing. They should have no food for at least twenty-four hours before being killed. To some this may seem cruel, but there cannot be any cruelty involved, owing to the fact that a well-fattened specimen could live for five or six days upon its food reserves, without any inconvenience to its general health. This starving for a while allows the crop and intestines to become emptied of food, and the poultry will, therefore, keep much longer if required, for if food is left in the body it soon decomposes and causes a bad smell and bad colour.

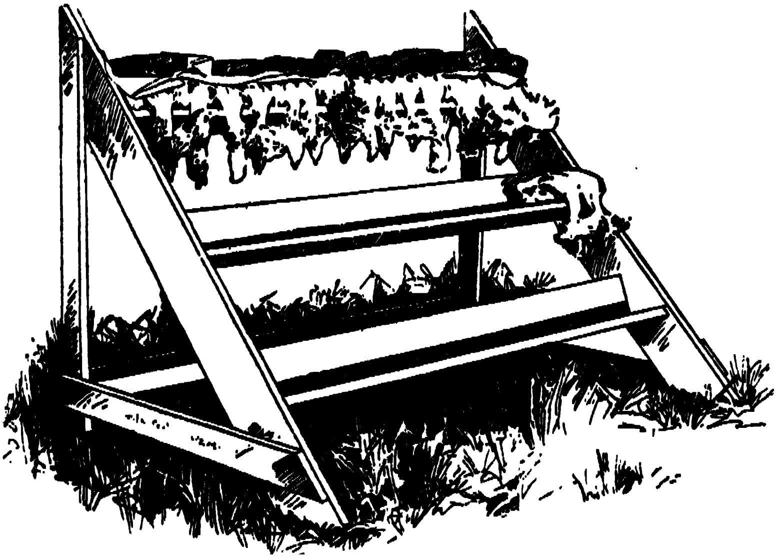
Again, the flesh of a fowl which has been well fasted eats much better; it is less liable to hardness, the tissues are softer, and consequently the bird has a better appearance.

——**METHODS OF KILLING.** There are various methods of killing poultry—some of them very objectionable. The best plan is the dislocation of the neck. This is so much cleaner and easier than the other methods which we may have to describe. The work is carried out in the following manner and may be learned by a novice with a very little practice.

The operator holds the bird by the two legs in the left hand, grasping the ends of the wings in the same hand, this latter being to prevent the bird struggling and fluttering about when being held ready for killing in this way. The back of the bird should be uppermost. The head is now taken between the first and second fingers of the right hand, the comb of the bird touching the palm of the hand, and the fingers closing upon the neck, quite close up to the head. The neck is then drawn out quite straight by the right hand to its full length, then draw upwards, making, as it were, the figure four, with a sharp pull (but not too vigorous, or the head will be pulled off); the vertebral column is thereby broken, and the veins and nerves are torn asunder. Such a method causes only a moment of pain, because the brain, being the centre of all feeling, is divided instantly the vertebral column is broken. When properly done there is no blood about the head of the bird to be seen, and the [illegible] will be hanging to the neck just by the skin only, the blood draining down the cavity and head. Some people imagine that the bird does not look so white if killed in this way, thinking that the blood must be drawn out of it to give it the proper white colour. Such is not the case, when properly killed, for if the bird is kept in the same position as when killing, *viz.*, head downwards, all the blood will rush to the head. Another method is to cut the throat, but for several reasons this is objectionable. What more unsightly can be seen in the markets than birds with a deep gash in the throat, blood smeared all over the head, and often in different parts of the body. Moreover, if killed in this manner, and several have to be packed into one hamper or box, unless each head is tied up with paper they get into a very bad condition. Yet another method, and one which is often applied in this country, known as "sticking," or "palating," Generally a special knife is used, one with blades each side. The bird is tied by the legs and wings and laid upon a table or block, on its back, the mouth is opened and the knife is inserted into the slit which is noticed in the roof of the bird's mouth. We have frequently seen geese killed in this manner, but are

Killing Fowl by Piercing Brain with Knife.

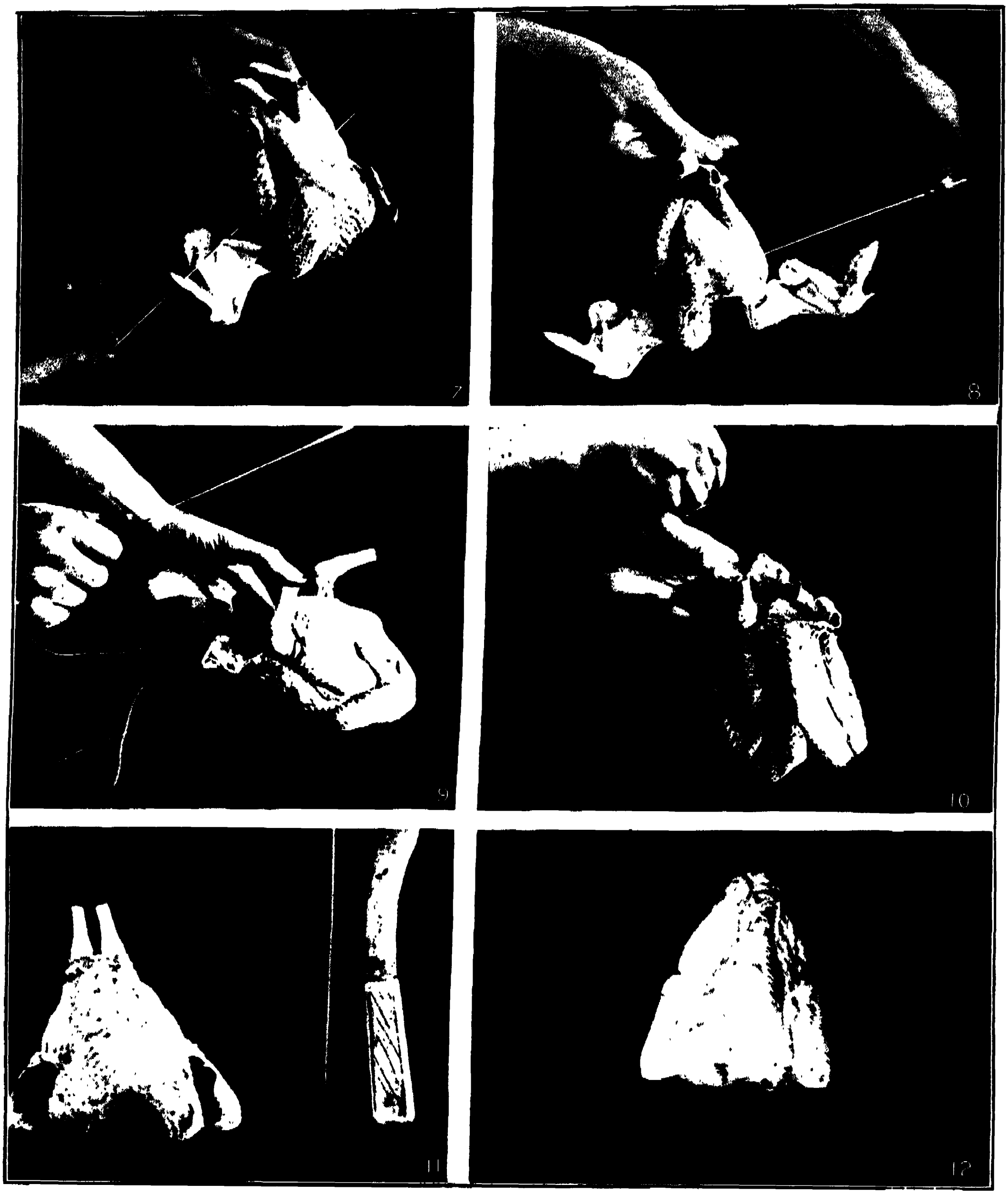
not in favour of the practice, much preferring to see dislocation of the neck. No one should try to kill a bird by palating unless they have been previously shown how to do it properly, for, although very effective when done in the right manner, a novice may punish a fowl very much if the knife is pushed against the frontal part of the skull, or if not using sufficient force. However, immediately the knife goes through and touches the brain it causes paralysis and no pain is felt.



Chickens Placed in Shaper previous to Packing for Market.

——**PLUCKING.** This is more easily performed if done before the bird becomes cold. In fact, the best and quickest method is to break the neck, and start plucking immediately. Although the bird will be seen to shake and flutter about considerably, yet there is no pain, for we have learned upon good authority that as soon as the spinal cord is severed there is no more feeling. If the bird, for some reason or other, cannot be plucked at once, then it is best to leave it until quite cold, for it must not be attempted when in a half-cold state, or else the skin will be torn and the bird spoiled in plucking. This must, on no account, be allowed to happen, for it soon depreciates market value. The best position for the operator when plucking poultry is to sit in a rather low chair holding the bird by the legs and wings, as previously described relative to killing, having the head dangling downwards, the feathers having to be plucked the reverse way to that in which they are on the body. It is work which requires some practice, for although anyone can pluck a fowl, yet one may not be able to do it properly at first; certainly, not both well and quickly. Speed comes with practice. The aim must be to do the work well. The start may be made upon the back, taking several feathers between the thumb and first finger of the right hand, and giving a sharp pull backwards they come out quite easily; by pulling the feathers quickly they will be found to come out without tearing the skin. After the back is plucked, then turn the bird over, and do the breast and under part, and by this time the bird will have stopped all movements. The neck should be plucked up to within a few inches of the head, always leaving the feathers on the top part of the neck. Legs should next be plucked, stripping the feathers off down close to the shanks; wings next, and these take a little longer to complete the larger feathers or flights, which have to be pulled out two or three at a time. The tail feathers come last; these should

PLATE NO. 64



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Marketing—Trussing the Fowl.

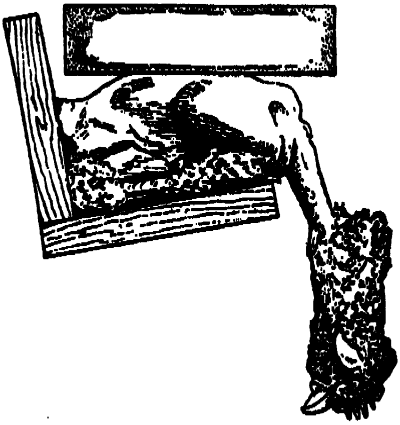
7. Making the first stitch. Note the position of the needle through the wing. 8. Bringing the needle back to make the first tie, and to bring the wings into position. 9. Commencing to stitch the back part, bringing the leg into position. 10. Showing the string in place and ready to tie. 11. Showing the fowl finished, with liver and gizzard under wings, also showing the implements which are required—the needle, knife and string. 12. The fowl tied into position.

be pulled out singly, or the flesh may be torn. With practice it is possible to pluck twelve fowls an hour, but this does not include stubbing.

——**STUBBING.** Stubbing is the process of taking out the short thick quills, which have not yet formed into feathers. Some birds require more stubbing than others, and the time of the year at which they are killed also makes a difference. It is the best done by the means of an old blunt knife, passing it underneath the stubb, gripping it with the thumb and giving a sharp pull backwards. Sometimes when the birds are killed quite young there are very few stubbs to pull out, but in older birds and ducklings it is a tedious process. However, if they are to be sent to the market properly prepared, this must be done. They should also be singed to get the fine hairs off, which are numerous on some birds, and look unsightly if left on after the bird is plucked. This is a simple process and only takes a few minutes to do a dozen or so. A wisp of straw or paper is set alight, and the birds held over the flame, not too close or it may discolour them, just turning and twisting them over so that the flame touches all the parts. This singes the hairs off close to the body, and makes the birds quite clean. They should be held by the feet in one hand, and by the head in the other, while this is being done.

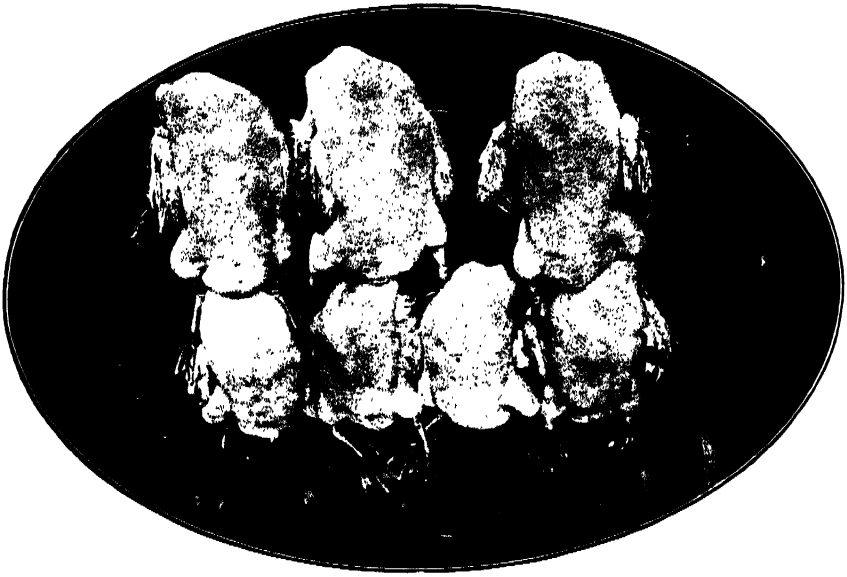
——**TYING DOWN OR SHAPING.** There are different ways of shaping a bird and tying it ready for packing. Some use what is called a shaping board (two boards nailed at right angles), the birds being placed in this, breast downwards, while warm, and a board put upon the top with heavy weights. This, when properly done, squares up the back part of the fowl and makes it look plump and of good shape. When tying the bird, one plan is simply to tie the legs together at the hocks, but this does not give them the finished appearance that they should have. The following is a more satisfactory method:

Cut two pieces of string about six inches long, and tie a piece on each middle toe; with this bring the toes up under the wings together, so that they nearly meet upon the back, and tie firmly. Now cut another piece of string about twelve inches long, and pass one end through the legs at the back of the bird. Bring it over the back, tying it very firmly just over the "Parson's Nose." Then double the wings over the back, and the bird is finished. This throws the breast meat up, and makes the bird look very neat and compact; in fact, without faking, it makes a poor bird show up the best qualities it has got, for what little breast flesh it may have will at once be made prominent. The breastbone must never be broken—this is a stupid practice, which is not so common now as it was a few years ago.



Chicken in Shaper.

—— **GRADING.** Where several birds are being sent to the market at once it is well to grade them. The great fault of many people is to put the largest on the top when packing. However well birds may be prepared it will be impossible to get them all the same weight and appearance. If three dozen are being despatched, it is quite likely that one dozen out of them will be smaller than the others. A better price will always be obtained when the birds are sorted out and carefully graded. Another point about this is that a salesman gets to know that the birds are graded and can rely upon one package being nearly alike right the way through. It often means a quick sale and is one of the finest advertisements a poultry-keeper can have, and well worth greater attention than is at present paid to it.



Ducks Ready Dressed for Market.

——**PACKING.** One of the best ways of packing is in use in Sussex, and has been carried out for many years. The "fatters" use what are called "peds." These are made of light wood, a framework of staves, and the inside lined with deal board. They are made in different sizes, and hold twelve, eighteen or twenty-four fowls. Some are larger, but the two-dozen size is generally found to be large enough. Certainly it is not advisable to pack more than this number together if they have far to travel. These "peds" are lined with clean straw, and the birds packed in layers, putting straw between and on the top before the lid is tied down. One word of caution, which might be taken to heart by the oldest hands at this work: Never pack birds until they are quite cold. Many a man has lost a good sale by packing a hamper of birds before they were cold. If the bird is still warm when packed it is almost a certainty that it will be green at the back part when it is unpacked; if not, it goes green in a few hours. This is especially the case in the summer months, and is one of the chief causes of poor sales.

—**DESPATCH.** It is generally advisable to get into touch with the salesman, to find out which days he wants the birds to arrive in the market, for being himself always there, he must know the state of the market much better than those who are living right away in the country. Always try to keep a regular supply and do not have too many salesmen to do the work. Send the birds up properly graded, regularly, and senders will soon have customers who get to know and appreciate good-class chickens, which will mean good prices generally returned.

——**BEST TIME TO WEED OUT.** Every poultry-keeper who is breeding cockerels and pullets for stock must be continually thinning the young birds down. What may look like a promising cockerel at eight weeks may develop no good points, though perhaps several bad ones at sixteen weeks old. If so it should be struck off the list, sold either dead or alive. From the best mated pens there are always sure to be many which are far below the standard and these prove a dead loss if kept beyond a certain stage. Luckily, there is always a demand for this class of bird for the table, and a low price when young is better than a low price after keeping them several months.

Assuming that one is breeding for show, it is impossible to pick out all the best birds when quite young, for the reason that the colour is not established, and what looks like a ragged, badly-marked bird at ten weeks, may develop into something rather good a little later. Most breeds can be sorted out at fourteen to sixteen weeks, and at this age, if of the heavier class, will be worth good money as market or table chickens. By taking these away where one has a batch of sixty or a hundred it gives the others a much better chance to grow out, and saves the food bill. If, on the other hand, the breeder has an unlimited space, he can sort the birds out into their different sizes and ages. Although he may have no need for immediate disposal, it will be to his advantage to sell many, and when selecting the birds for removal it is always wise to keep them in lots of the same age, or as nearly so as possible, for, to put a batch of cockerels twelve weeks old down with another lot about eighteen weeks, is a check on the younger birds. They will be persecuted all day long and unable to get their proper share of food, or, in fact, anything else, but will be continually scurrying from one corner of the pen or field to the other. It is well when saving birds for show or stock to go through them two or three times, that is, on different occasions a few weeks apart. Some of them on the first occasion may be like the eggs in an incubator which are being tested, a little doubtful; so with the cockerels or pullets, and in a few weeks it can be decided better whether they are worth keeping or not. Of course, all crooked-breasted cockerels should be drafted out. There are, usually, too many of such saved, and then sold as stock birds. This has been the source of much trouble at times.

——**DISPOSAL OF SURPLUS STOCK.** This is generally not a very difficult matter. In some cases it may be possible to find sufficient use for them in the house, or, perhaps, a few may be sold at private hotels or restaurants. This is a good outlet for the young birds if a supply can be kept going regularly. But often this is where the trouble comes—in the inability to keep up a regular supply. In this case it is sometimes found to pay to buy in a few birds for a while, so that the contract may be kept going. Much better prices can be made when the birds can be sent in regularly, for the people who are buying them get to have confidence in the transaction, and by always being able to depend upon having the birds at the stated time will be willing to pay a good price for them. This cannot be maintained when the birds are sent to the markets, for here one has to take what is offered or not sell them at all. It will pay the larger poultry-keeper to fatten and send his surplus stock to the London or some other big markets. The process of fattening has been dealt with elsewhere, but it may be said here that for this purpose it is not necessary to cram the birds, unless appliances are at hand, but they can be trough-fed for fourteen days or so, and sufficient extra flesh put on so that they will command a fair market price. Read carefully the notes on packing table poultry before attempting to send to market, for much depends upon the way in which the birds are despatched. In this part of the work make a point of studying detail, for, as in everything connected with poultry keeping, the minor points, if attended to, go towards making success.

——**EGGS, AVERAGE PRICES.** In general there is what economists describe as a wide market—in which prices rise and fall simultaneously throughout a large area—for goods that are in universal demand, but as eggs are not durable, and there is no sufficient method in this country of collection and forwarding to market, the egg markets are narrow and consequently many—being in most cases confined to the immediate neighbourhood of the farm upon which the eggs are produced. This explains the sometimes very wide differences in prices, even in adjoining parishes, differences which could be considerably reduced if producers would help themselves by organization for marketing purposes. How can the farmer who makes no more than 1/- for 20 new-laid eggs, hope to make his production profitable—the while his foreign competitors, by a complete method of collection and forwarding, supply the markets which are his by right of nationality? Owing to this want of system, it comes about that it is by no means unusual to find in a comprehensive list of quotations as much as 1/- per dozen difference between two markets in England, and a difference of sixpence between two towns within one district is by no means unusual. It will, therefore, be obvious that it is impossible to give a table of average prices that shall be representative of the trade of the country as a whole, and the figures have therefore been confined to the London markets. It would, moreover, be misleading to give the averages based upon the figures of any one year, the fluctuations often being considerable from various causes; and the following averages have, therefore, been based upon the quotations of a series of years, and may in consequence be taken as fairly representative of normal conditions. The first table will include the range of average prices week by week, and the second will consist of the inclusive average for each month, in each case for English new-laid eggs, per long hundred—120

AVERAGE WEEKLY RANGE.

First	Week,	From	16/0	to	23/0
Second	,,	,,	13/0	,,	16/0
Third	,,	,,	12/0	,,	15/0
Fourth	,,	,,	13/0	,,	15/0
Fifth	,,	,,	12/0	,,	13/0
Sixth	,,	,,	10/0	,,	13/0
Seventh	,,	,,	10/0	,,	13/0
Eighth	,,	,,	10/0	,,	12/0
Ninth	,,	,,	9/0	,,	11/0
Tenth	,,	,,	8/0	,,	10/0
Eleventh	,,	,,	8/0	,,	10/0
Twelfth	,,	,,	8/6	,,	10/0
Thirteenth	,,	,,	8/0	,,	9/0
Fourteenth	,,	,,	7/6	,,	8/6
Fifteenth	,,	,,	7/0	,,	8/0
Sixteenth	,,	,,	7/6	,,	8/6
Seventeenth	,,	,,	7/3	,,	8/6
Eighteenth	,,	,,	8/0	,,	9/6
Nineteenth	,,	,,	8/0	,,	9/6
Twentieth	,,	,,	8/0	,,	9/0
Twenty-first	,,	,,	8/0	,,	10/0
,, -second	,,	,,	8/6	,,	10/0
,, -third	,,	,,	8/6	,,	11/0
,, -fourth	,,	,,	9/0	,,	11/0
,, -fifth	,,	,,	8/6	,,	10/0
,, -sixth	,,	,,	8/6	,,	10/0
,, -seventh	,,	,,	8/6	,,	10/0
,, -eighth	,,	,,	9/0	,,	11/0
,, -ninth	,,	,,	9/0	,,	11/0
Thirtieth	,,	,,	8/6	,,	11/0
Thirty-first	,,	,,	9/0	,,	12/6
,, -second	,,	,,	8/6	,,	12/0
,, -third	,,	,,	9/6	,,	12/6
,, -fourth	,,	,,	9/6	,,	12/6
,, -fifth	,,	,,	11/0	,,	12/6
,, -sixth	,,	,,	11/6	,,	12/6
,, -seventh	,,	,,	10/0	,,	12/0
,, -eighth	,,	,,	11/0	,,	13/6
,, -ninth	,,	,,	11/0	,	13/6
Fortieth	,,	,,	12/0	,,	14/0

Average Weekly Range—*Continued.*

Forty-first	Week From	12/0	to	14/0
„ -second	„ „	12/0	„	14/0
„ -third		12/6		14/6
„ -fourth		14/0		16/0
„ -fifth		15/0		17/0
„ -sixth		15/6		17/6
„ -seventh		16/6		18/6
„ -eighth		18/0		20/0
„ -ninth		18/0		20/0
Fiftieth		20/0		22/0
Fifty-first		20/0		22/0
„ -second		18/0		20/0

Monthly Averages.

January	15/0
February	11/6
March	9/0
April	8/0
May	9/0
June	9/6
July	9/9
August	11/0
September	12/0
October	13/0
November	17/0
December	20/0

It must, of course, be remembered that such averages may in some particulars be more or less wide of the mark in any given month or week of any year, nevertheless, apart from unexpected fluctuations, the manner of their working makes them sufficiently accurate to indicate approximately the average rise and fall to be normally expected at the several seasons and periods.

MARKING (*see* "Leg bands").

MATING. **DOUBLE MATING.** With several breeds of poultry exhibition standards have been adopted for the respective sexes which are antagonistic, and require what is known as double-mating, that is, breeding pens must be kept for males and females respectively. Hence we hear of cockerel breeders and pullet breeders. As a result the former produce cockerels fit for the show room, but the pullets are useless in that way, however good they may be in other respects, and *vice versa*. Such a system is not only unfortunate, but it ought to be condemned, as it works against the true interests of poultry breeders. Under natural conditions the males are always more certain as to some external characters, whilst hens are plainer and duller in appearance, and vary to a much greater extent. The adoption, therefore, of rigid standards for hens is a mistake, as with them type and development of economic qualities are of much greater importance than colouration of plumage. That they should conform to the general character of the race is without question, in respect to special features, such as comb, etc., but to attempt more is undesirable. A standard which so exalts the colouration or markings of plumage in the hens that it is necessary to adopt double-mating is wrong in principle. The system is found especially in the coloured races of fowls, and it has done much to affect their popularity among practical breeders.

——NUMBER OF HENS TO COCK. A question that requires careful consideration when discussing the mating of poultry is the proportion of hens to one male bird, and probably there is no question so frequently asked as this, especially by those who have not had a great amount of experience. This is a question that cannot be answered off-hand by merely stating such and such a number, as so much depends upon the variety, upon the stamina and vigour of the male bird, and upon the conditions under which the fowls are kept. It is quite impossible to lay down any hard and fast rule with regard to this important question, and no one can deny that it is important, because upon this depends, to a large extent, whether the eggs prove fertile or sterile. The following figures, however, may be taken as correct, though as we have already suggested they are subject to certain variations. Very early in the breeding season, that is during December and January, four or six hens of the heavy type are sufficient to mate with one male bird. This number may be gradually increased as the season advances, until towards the close as many as eight, ten and even a dozen hens can be attended to by one cock. So far as the lighter breeds are concerned, such as the Minorca and the Leghorn, these figures may be considerably increased, and during the winter months eight or ten hens may be mated to one male bird, increasing the number as the spring approaches to fourteen or even sixteen. When breeding stock are at liberty a larger number of hens may compose the pen than when they are confined in a run, but the breeder must use his own experience to a great extent, and if he finds that the eggs are proving infertile he must reduce the number of hens. At the same time it is well to bear in mind that it is quite possible to have too few hens in a breeding pen, and when this is the case the eggs will prove equally infertile. If it is found that the backs of the hens are becoming bare, and the feathers falling out, it may be known that the cock has not got sufficient hens with him, and the number should be increased.

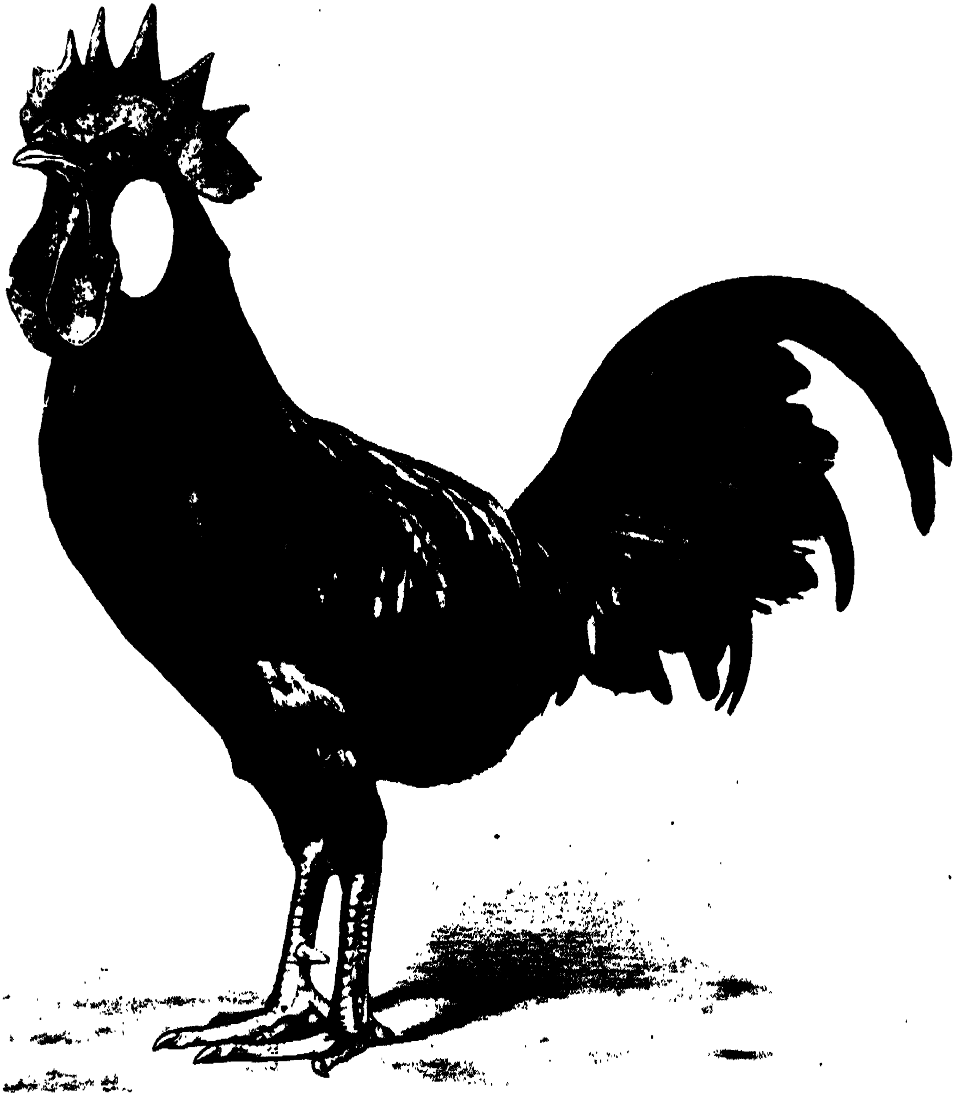
—— **SELECTION OF BREEDING STOCK.** Upon the choice of the breeding stock a very great deal depends, and it undoubtedly influences to an almost incredible degree the success or the failure achieved. It is of the most supreme importance always to bear in mind one fact when selecting the breeding stock, namely, that "like produces like," and the parents thus impress to a very large extent their own characteristics upon their offspring. The good points are reproduced; but so are the bad, perhaps, in an intensified form. All fowls possess some fault or other—a perfect bird has yet to be hatched—and, therefore, in making up the breeding pen care should be taken to select cocks and hens possessing dissimilar faults; say, for example, that the desire is to breed table chickens, and the male bird is somewhat shallow in body, then in order to rectify this as much as possible, very deep bodied hens should be mated with him. It is a mistake to leave until the last moment the selection of the breeders, for in this case it is so likely to be done hurriedly and, therefore, probably unsatisfactorily. The first rough selection should be made about August or very early September, and the birds that look as though they would probably prove of value should be carefully watched and given special attention. The wasters, which can generally be distinguished when quite young, should be rigidly weeded out, so reducing the food bill and leaving more space for the birds possessing promise of future value. To cramp or stunt the latter's growth by allowing them to breathe impure air or to run about on contaminated ground will nip in the bud the characteristics so essential to success in those destined as breeders. Too often misshapen, badly marked or otherwise faulty birds are allowed to exist to the detriment of the remainder. We are bound to admit, however, that when such chickens have reached the age of ten or twelve weeks the temptation to keep them to killing age is very great; the mistake is to keep them, as is so often done, until they reach this stage. They should be weeded out from the very first, particularly when space is limited. The birds giving most promise of growing into good stock are not necessarily those most pleasing to the eye as youngsters; for instance, the pullets which at a very early age have donned their adult plumage, and look trim and neat, perfect in their premature symmetry, and, so far as appearances go, on the eve of laying, seldom reach the proper size of the variety to which they belong, nor prove of much service for breeding purposes. It is better to retain for stock those that are big boned, angular and somewhat ungainly in appearance, and that seem to be growing right away from their feathers. These birds are developing their frame quickly and their internal organs slowly; the more slowly development takes place in the latter direction the better. It is not the very early laying pullet that is the best breeder. The birds should be allowed to grow slowly, and when maturity is attained it will be found that they have reached a greater state of perfection.

While the selection of the pullets must be carried out with extreme care, even greater importance attaches to the male birds. As only one cock is required for every eight, ten or a dozen hens the selection should be much more severe, and besides this, in a breeding pen, if the male bird possesses any faults they are reproduced in all the chickens produced, whereas if one of the hens possesses a certain fault, and there are ten birds in the pen it means that roughly only one out of every ten chickens is liable to have this fault. Then, too, the reason why a very severe selection is recommended in the case of the male birds is that there is no sale for mismarked specimens, save for edible purposes, whereas there is always a ready sale for mismarked pullets for producing eggs for consumption. Every cockerel, therefore, that does not come up to the standard that the poultry-keeper has set before him should be marketed as soon as possible, as every day he lives after he has reached killing size he is becoming less valuable, while all the time he is consuming food, and occupying space that could be put to better use. Fortunately we are able, as a general rule, to determine the good and bad characteristics of a cockerel when he is quite young, as they mature more rapidly than pullets. When the selection is being made each bird should be individually examined, as only in this manner is it possible to tell whether it possesses any grave defects. The breast bone should be examined to see that it is straight; and the joints likewise should be tested. Any deformity would, of course, render the bird unfit for breeding purposes, especially as the defects are more than likely to be exaggerated in the offspring. The male bird possesses the greater influence upon the outward characteristics —shape, size, plumage and general appearance—but at the same time he exerts a certain influence upon the economic qualities. The hen, on the other hand, affects to a much greater degree the inward qualities, laying, temperament, etc.—while her influence upon the externals is comparatively slight. In choosing either pullets or cockerels for producing good layers, birds that are well developed in the posterior region of the body should be chosen, that are firm and close, of a good size, clean, and tall on the legs, and active in habits. For table purposes those that possess a large breast development, are shortish on the leg, and heavy in body will prove the most satisfactory, while if all-round birds are required, evenly balanced, medium sized pullets should be selected. Unhealthy stock birds should never be allowed a place in the breeding pen, for if the parents possess any faults in this direction, they are practically certain to be transmitted to the offspring, probably in an intensified form. The only really satisfactory method of eradicating disease from the poultry yard, or of preventing it from making an appearance, is to employ breeders that are thoroughly healthy and vigorous. There are several signs that may be regarded as indicative of good health—a bright red comb, activity, readiness for food and a bright and glossy appearance of the feathers. Unhealthy birds should be allowed no place in the breeding pen; if they are, failure is practically certain to ensue.

——**AGE OF BREEDING STOCK.** A point that needs careful consideration is the age at which breeding stock are in their prime, as, naturally, this is a matter that affects very materially the health and vigour of the offspring. Many tests have been made with a view to determine whether old or young stock produce the finest chickens, and while the results arrived at differ a good deal, certain facts have been proved beyond doubt. It is as a rule a mistake to mate pullets and cockerels together, as the chickens from such parents generally lack stamina and constitution. Moreover, birds that are very old rarely produce strong chickens. If pullets are employed, a male bird in his second or third year should be mated to them, and *vice versa*. Laying hens do not pay to keep after they have passed through two seasons, as the number of eggs they produce do not, as a rule, pay for the food they consume. We are now referring to the ordinary class of laying hens—those that are kept for producing eggs for edible purposes—and not to highly-bred exhibition stock. Plenty of hens of the latter class would pay did they only lay a dozen eggs in the course of a twelvemonth, as their eggs are valuable, and likely to produce such excellent offspring. The best months to hatch breeding stock are February, March, April and, for some of the quickly maturing, non-sitting varieties, May. The exact time must depend, of course, upon the breed, strain, and conditions under which the birds are kept, as these have so material an effect upon the rate of development. Birds hatched during these months should lay the following autumn and winter, when eggs are scarce and dear. After two seasons they should be disposed of—that is, about the June or July two years after they are hatched. Many poultry-keepers prefer to keep their hens until after they have passed through the moult, when they can generally procure sixpence or eightpence per bird more. This plan is a mistaken one, however, because it is infinitely better to sell them at once rather than keep them throughout the moulting period, when they are occupying valuable space and consuming good food. During July and August there is an excellent demand for fat old hens, and prices generally range fairly high. It must never be forgotten, when supplying this trade, that the birds should be marketed alive, because the bulk are sold to the Jews, who can only eat flesh prepared by one of their faith. The remembrance of this fact may make as much as ninepence or a shilling per bird difference in the price obtainable. When one only keeps a few birds it is an easy matter to know which are to be killed and which retained, but when one has a large number it is necessary to arrange some method by means of which they can be distinguished. One of the simplest methods we know is to ring the birds hatched one year upon the right leg, and those hatched the following year upon the left. Thus, one year, all those with rings upon their right legs must be disposed of and, the next year, those with a ring upon the left. In this way it is quite easy to know which are which, and the age of any bird can be told at a glance. There are several excellent rings upon the market, which are extremely cheap and quite effective. One of the best and cheapest kinds merely consists of a piece of copper wire, which can be used over and over again.

In connection with the age of the breeding stock we may mention a very interesting fact which is little known. In the North of England, where a good deal of illegal cock-fighting is still practised, it is customary to employ old birds for producing fighters. We were informed by one who knew a good deal about the subject that a five-year-old cock-bird mated with four-year-old hens produces the finest fighting cocks in the world. For this purpose cockerels from young parents are almost valueless; they should be at least three or four years in order to possess the stamina and pluck so necessary in the ring. We do not know how far this applies, as our

PLATE No. 65



Single Comb Black Minorca Cockerel.

(*Bred and exhibited by Mr. G. Mortimer Smith, The Heath Farm, Bewdley, Worcestershire.*)

Winner of 1st Tamworth; 2nd Lye; 2nd Leamington; and V.H.C. Birmingham, 1908.

experience has been that younger birds produce far healthier stock, but it is merely mentioned in passing as the opinion of one who has done a considerable amount in the breeding of fighting cocks.

——**BREEDING FOR SEX.** Many theories have been put forth with a view to enabling breeders to control the sex of the next generation. But in practice these break down. Where the main object is production of table poultry, sex is of no moment, but when eggs are the main object then not more than five or ten per cent. of cockerels as compared with pullets are required. If by some means this proportion could be secured at the time of hatching it would be greatly to the advantage of the breeder. It has been claimed that the mating of a cockerel with adult hens tends to the production of a larger number of males, and that if an adult cock is mated with pullets females will be in excess. But practical experience has shown that there is no reliance to be placed on this or any other method. In fact, later observations have shown that the feeding of the mother has more to do with determination of sex than anything else. Schenk's theory is that heavy feeding of the mother tends to the increase of females, and that she should not have meat or other foods strong in nitrogenous elements. The records published hitherto have not, however, proved at all certain in results, and even the last named scientist states that there was no known method by which the production of females could be controlled.

MEALS (*see* "Feeding Stuffs").

MEALY. Pale, dusty colouring in Buff Cochins.

MEAT, FRESH AND PREPARED (*see* "Feeding Stuffs").

MEDITERRANEAN BREEDS. There is a great uniformity of type among the various races of poultry found in the countries bordering on the Northern shores of the Mediterranean Sea. So far as one can judge poultry have been kept in Italy in a domesticated state for upwards of 2,500 years, and the Romans apparently devoted much attention to their fowls. They are referred to upon many occasions in the writings of Cicero, Columella and Pliny, and there is every reason to suppose that poultry were kept in those far-off days in very considerable numbers. From Italy it would seem that the domestic fowl gradually spread to other countries in close proximity, in proportion as the facilities for intercommunication by sea and land increased. The Leghorn seems to be the type that was first introduced, and it is interesting to note that while there are to-day a great number of breeds that come under the heading of the Mediterranean, they are all extremely similar to the original.

In contradistinction to the Mediterranean class of domestic fowls there is another large family, termed the Asiatic, which are dealt with in another part of the Encyclopædia. For the sake of comparison we may very briefly indicate the type and economic qualities of the Asiatic breeds, as they differ in so many respects and so very distinctly from the Mediterranean. The Asiatic fowl is large in body, with a full and deep breast, carried well in front; the back is broad and short; and the tail, which is medium in length, rises sharply from the back, being almost as high as the head. The head is small, rather short, and well rounded, carrying a small comb. It is a big-boned bird, with powerful legs and feet usually heavily feathered. The general appearance is that of a large-bodied fowl with a good carriage. The weight varies considerably in the different breeds, but a fair average, we think, is ten pounds for an adult cock and eight pounds for a hen. So far as economic characteristics are concerned the Asiatic breeds are, in the first place, valuable winter layers, producing the bulk of their eggs during the colder period of the year, provided, of course, they are hatched sufficiently early in the spring. The Asiatic has also played an important part in the formation of new breeds, and several of our most popular varieties of to-day owe many of their best points to its influence. The hen is a persistent sitter and a careful and attentive mother. Its table qualities are medium, though it possesses rather too much bone to be termed really first-class. The chickens of this type are fairly hardy, but grow slowly.

The Mediterranean type of fowl differs in nearly all respects from the Asiatic. For one thing the birds belonging to this class are small bodied, gradually narrowing towards the tail; as it were, the body is wedge-shaped. The back is round; the breast is only poorly developed; the neck is well arched; while the head is small, carrying a large comb, which is generally single. The size of the birds belonging to the different breeds varies somewhat, but the average weight of the adult male bird is from six to seven-and-a-half pounds, while that of the hen is from four-and-a-half to six pounds. Hens of the Mediterranean type are splendid layers, producing a large number of very big eggs, which, it is interesting to note, are always white shelled. They are, however, essentially spring and summer layers, producing comparatively few eggs during the winter months. This is the chief reason why the general purpose type of fowl has to some extent superseded the Mediterranean, since the greatest developments during the last few years have been along the lines of winter egg production. At the same time, if hens of this type are carefully selected and are hatched at the right time of year they can be induced to produce a certain proportion during the scarce season. All the breeds of this class are non-sitters; occasionally a hen evinces a desire to sit, but, as a rule, it is scarcely safe to trust her upon valuable eggs, as she is so liable to forsake her nest. The table properties are distinctly poor. The flesh is hard and stringy, while it is next to impossible to fatten the cockerels. This is another reason why breeds belonging to the Mediterranean class have made so very little progress of late years, as it is a difficult problem to know exactly how to get rid of the surplus cockerels at a profit; and however fortunate one may be there is bound to be a surplus. Cockerels of the table or general purpose class can always be fattened and disposed of at good prices, but with the non-sitting breeds this is not so. The chickens are extremely hardy, very precocious, developing rapidly.

The breeds belonging to the Mediterranean are thirty in number, but many of these are unknown save in their own neighbourhood, being purely local. There are thirteen breeds belonging to this class that are to be met with in this country, and they are as follows:—

Ancona.
Andalusian.
Braekel.
Campine.
Hamburg.
Houdan.
Lakenfelder.
Leghorn.
Minorca.
Polish.
Redcap.
Scotch Grey.
Spanish.

Of these the most valuable, from an economic standpoint, are the Ancona, Campine, Houdan, Leghorn, Minorca, Redcap and Scotch Grey.

MENDELISM. Mendelism is a term applied to a certain method of breeding to be hereafter described, the chief essential of which is that the posterity of each individual must be traced separately.

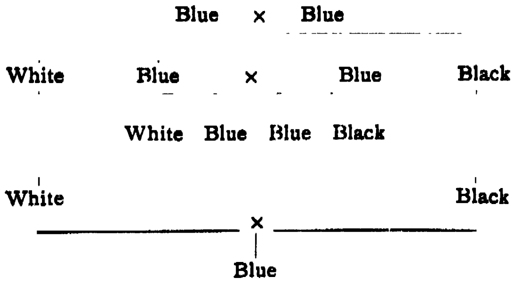
The first person to inaugurate this system was a priest, Gregor Johann Mendel, born in 1822 of Austro-Silesian parents, who was holding the position of Abbot of Brünn at the time of his death in 1884. For many years he conducted series of experiments with plants in the garden of his cloister with a view to determining "the number of different forms under which the offspring of hybrids appear," . . . . "to arrange these forms with certainty according to their separate generations" and "to ascertain their statistical relations." The far-reaching results of these experiments were read to the Brünn Society in 1865 and the paper was published in the *Verh. naturf. Ver., in Brünn, Abhandlungen*, IV., 1865. Curiously enough, however, but little notice was taken by contemporary students of natural science of the results of the eight years' labours of this unknown investigator, and it was not until 1900, or sixteen years after his death, that co-workers awoke to a full appreciation of the magnitude and significance of Mendel's discoveries. Repetition of his experiments in the cross-fertilization of varieties of garden peas, and the extension of the system to many other classes of plants and animals by a number of well-known botanists and biologists, have proved to the most sceptical that Mendelism is more than a mere theory; and we now know that an understanding of the principles of heredity involved is absolutely essential as part of the equipment of the would-be successful poultry-breeder.

Briefly stated, Mendel and his followers have demonstrated that the hereditary qualities or characters of individuals are represented in the germ cells by definite and unchangeable units.

It is a well-known biological fact that the union of two germ cells (male and female) is necessary for the perpetuation of life; also that the mating of similar individuals (the union of the germ cells of two animals of the same breed) usually results in offspring of the same type. In extension of this principle, it is now found that in the germ cells are formed as many sorts of character-units as there are possible characters, and that, on mating, the qualities of the progeny are influenced by the method of combination and class of these units.

Thus, when we mate two pure-bred Black Orpington fowls we expect to get Black Orpington progeny, and never fail to do so if the birds are of pedigree strain and flawless antecedents. The reason like produces like is because, in this and similar matings, both parents are contributing black colour-units; both are contributing the same class of comb, the same clean legs, the same type, size, egg-shell colour, and all the other innumerable characteristics which go to make up a Black Orpington, and which in combination distinguish it from other varieties of fowl. In other words constant progeny are formed when the sperm cells of the male and the germ cells of the female are of like character and are both provided with the material for creating quite similar individuals. When their components are not alike quite different results ensue, a classical example of one phase of which can be drawn from the common experience of poultry-breeders.

Breeders of Andalusian fowls are well aware that their blues when mated together throw a proportion of white or white-splashed and of black progeny. No amount of selection ever makes the blues breed true to colour or alters the proportion of "wasters" produced by them. Interpreted in the light of the new discoveries the reason of the phenomenon is plain. In Mendelian phraseology, blue Andalusian fowls are heterozygous or impure individuals, their colour arising in every case from the union of a black colour-unit with a white-splashed colour-unit. At each mating SEGREGATION, or a separation up of these colour-units occurs, and from the union of black with black, white with white, and white with black approximately twenty-five per cent. of black chickens, twenty-five per cent. of white chickens, and fifty per cent. of blue chickens are respectively bred. The following table will help to make this clear:—



Proof that the phenomenon of segregation occurs in the germ cells is provided by the fact that when mating blue Andalusians together the approximate proportion of two blue chickens out of every four bred (the other two being respectively black and white) is always obtained by breeders; that the whites and blacks when mated *inter se* always throw chickens of their own colour only; and, paradoxical as it may sound, that when the "waster" blacks and whites are crossed all the chickens are blue. The blacks and the whites, then, are pure or homozygous breeds, from the crossing of which heterozygous or impure and differing individuals are bred.

As segregation is the essence of the discoveries which Mendel made it is important that breeders realize its significance and commit to memory the fact that unit-characters never, as a rule, permanently fuse, as has been for so long taken for granted. They remain, as far as is at present known, pure in respect of the quality they carry. The case of the Andalusian fowl affords one of the nearest examples we have at present of the fusion of two "pure" and definite entities, and, as already demonstrated, the apparent unity is of only a temporary nature, each factor subsequently reappearing in its original form. This example is not, however, an exactly typical case of the action of unit-characters under conditions of crossing.

When crossing two varieties (and by the words crossing and hybridizing in this connection must be understood the mating together of any two individuals which differ in one or more characters, the differing features only being taken into consideration) it is most usual to find that the character of one of the parents only appears in the progeny. This is evident when a rose-combed breed of fowl is crossed with a single-combed breed; a feather-legged breed with a clean-legged; a white-shanked with a yellow-shanked; a five-toed breed with a normal-footed race. In the first case all the chickens have rose combs; in the second they all have feathered legs; in the third the legs are white; in the fourth they all have extra toes. In Mendelian terminology the character which is borne by the crossbreds is called the DOMINANT character, the one which has disappeared the RECESSIVE.

That this disappearance is only of a temporary nature is evidenced by the fact that when the rose-combed half-bred individuals (*i.e.*, the brothers and sisters, or birds not nearly related, but of similar origin) are bred together, approximately twenty-five per cent. of their progeny will carry the lost single comb, the remaining seventy-five per cent. bearing rose combs like their parents. A still further breeding together in the next generation of similar individuals will demonstrate to the experimenter that the single-combed birds are apparently pure in respect of their comb character and show no signs of ever having been crossed. They will, indeed, continue to exhibit absolute purity as long as no further alien blood is introduced in future generations.

When mating together those birds which in the proportion of seventy-five per cent. came with rose combs the outcome is less simple. Although alike to the eye these birds prove to be differently constituted, approximately twenty-five being *pure* rose combs, which throw progeny bearing this character only; while the remaining fifty throw both rose-combed and single-combed offspring in the approximate percentage of seventy-five per cent. and twenty-five per cent. like the original crossbreds. The same principle applies to the crossbreds between feathered and clean-legged birds; white and yellow shanked; five-toed and normal-toed breeds, and others. Although one character only appears visibly in the crossbreds yet the feature which has disappeared still exists intact and in its full purity in their germ cells and will reappear under favourable conditions of mating, *i.e.*, when similar units meet.

Each half-bred, in fact, carries equal numbers of two sorts of comb character-units, R R S S, and it is obvious that when they are mated together it is purely a matter of chance which sort of sperm cell will unite with which sort of germ cell. As a matter of fact, however, according to the law of probability it will always happen, on the average of many cases, that each sperm cell bearing R and S will unite equally often with each germ cell bearing R and S, consequently one of the two sperm cells R in the fertilization will meet with the germ cell R and the other with the germ cell S, likewise one of the germ cells S will unite with the sperm cell S and the other with the sperm cell R as shown in the following diagram :—

The comb character-units of
the sperm cells of the half-
breds .... R R S S
The comb character-units of the | × |
germ cells of the half-breds. . R R S S

A still further practical demonstration of the working of these important principles of heredity and the law of probability may be made at home as follows :

Take of ordinary game counters, 100 red and 100 white ones, and mix them together in a bowl. Now get a friend, blindfolded, to pick out the counters in pairs, and note down final results. It will be found that he picks out approximately 25 pairs of red counters, 25 pairs of white counters and 50 pairs of red and white counters, which may be taken as an illustration of what takes place in the germ cells when half-bred brothers and sisters are paired. It is necessary to repeat the experiment at least three times and strike the average result, as the greater the numbers dealt with the closer will be the approximation to the expected ratio.

In addition to the two phenomena mentioned, crossbreds (first crosses) occasionally revert to a feature of some early ancestor. It must be emphasized, however, that broadly speaking whatever their appearance may be, on breeding the half-breds together segregation occurs in the usual way and the original characters reappear in perfect purity in a proportion of the descendants.

When crosses are made between individuals differing in more than one pair of characters the results are, of course, much more complicated and less easy to follow. Precisely the same principles apply, however, no matter in how many features the parent stock differ, and the original characters reappear in all the unions possible according to the mathematical laws of combination. Thus if the two specimens crossed differ in two pairs of characters, such as in the mating of a rose-combed white-shanked breed with a single-combed yellow-legged breed, chickens will ultimately come with every possible combination of these four features in approximately definite ratio. We will call the two parents R W and S Y. As rose comb and white shanks are both dominant all the chickens will come with these features; but on breeding them *inter se* segregation will occur and birds of the following nine classes and proportions will appear :

$$\frac{\mathrm{RW}}{\mathrm{RW}}+\frac{\mathrm{RW}}{\mathrm{RY}}+\frac{\mathrm{RW}}{\mathrm{SW}}+\frac{\mathrm{RW}}{\mathrm{SY}}+\frac{\mathrm{RY}}{\mathrm{RW}}+\frac{\mathrm{RY}}{\mathrm{RY}}+\frac{\mathrm{RY}}{\mathrm{SW}}+\frac{\mathrm{RY}}{\mathrm{SY}}+\frac{\mathrm{SW}}{\mathrm{RW}}+\frac{\mathrm{SW}}{\mathrm{RY}}+\frac{\mathrm{SW}}{\mathrm{SW}}$$

$$\frac{\mathrm{SW}}{\mathrm{SY}}+\frac{\mathrm{SY}}{\mathrm{RW}}+\frac{\mathrm{SY}}{\mathrm{RY}}+\frac{\mathrm{SY}}{\mathrm{SW}}+\frac{\mathrm{SY}}{\mathrm{SY}} =$$

$$\mathrm{RW} : \mathrm{SY} : \mathrm{RY} : \mathrm{SW} : 2\mathrm{RWS} : 2\mathrm{RWY}\ 2\mathrm{RYS} : 2\mathrm{SWY} : 4\mathrm{RWSY} = 9 : 3 : 3 : 1.$$

In actuality birds of the following character and composition may be expected in approximately every sixteen :

1 specimen with rose comb and white legs, which is pure in these respects and will breed true if mated to its like.
1 specimen with single comb and yellow legs which is pure in these respects and will breed true if mated to its like.
1 specimen with rose comb and yellow legs.
1 specimen with single comb and white legs.
2 specimens with rose combs and white legs, with single comb latent in their germ cells ready to be called into activity on mating with a specimen similarly constituted.
2 specimens with rose combs and white legs, undistinguishable from above, but with yellow legs instead of single comb latent.
2 specimens with rose combs, yellow legs, and single comb latent.
2 specimens with single combs, white legs, and yellow legs latent.
4 specimens with rose combs and white legs, undistinguishable to the eye from five birds previously mentioned, but with both single comb and yellow legs latent.

On the practical application of Mendelism it is necessary to say a few words. A study of the subject opens up a wide field of new ideas to the breeder. He learns among other things the true meaning of purity. He realizes that no long line of ancestors is needed to produce a pure-bred bird. Fixity of type comes suddenly; it is a phenomenon of individuals, and does not increase gradually from generation to generation. As Professor Bateson puts it, "It matters not how the parents are bred. They may be mongrels, as heterogenous in composition as a pack of cards; but if from two packs *similar* cards happen to be dealt, the product of these two cards is pure." Separate analysis of individuals will prove this fact; but it must not be forgotten that an organism may be pure-bred in one respect, cross-bred in another, and that the main object of the breeder is to create purity throughout. With the clue to heredity given us by Mendel's Principles this end can be attained in a third of the time it would probably have taken previously.

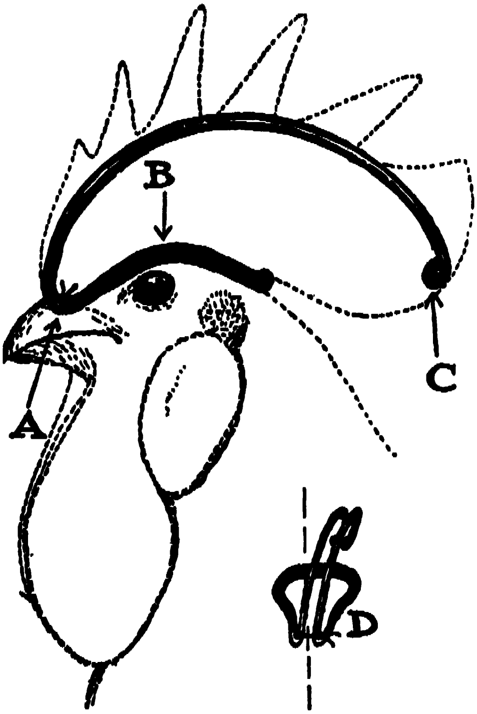
Much remains still to be learnt. We know, for instance, that new characters —mutations—are transmitted; but we know not whence or why they come. We are as much in the dark as ever with regard to the *cause* of variations, although when such occur we can now predict with a fair amount of certainty their probable behaviour under given conditions. The incomparable achievement of Mendel has taught us much, but we must bear in mind that selection must still be the mainstay of the fancier in the improvement of his stock.

MIDDLINGS (*see* "Feeding Stuffs").

MILK, USES OF (*see* "Feeding" and "Fattening").

MINORCA. The Minorca is one of the oldest breeds we possess. Its actual origin is somewhat obscure, but little doubt exists that specimens first found their way to these shores from the Islands of Minorca and Mallorca. About eighty years ago several persons were to be found, all in the West of England, who bred fowls remarkably like Minorcas. For nearly fifty years these Western breeders stuck to their black favourites without, however, gaining for them any widespread popularity. Suddenly a demand sprang up for specimens all over the country, until about ten years ago the fame of Minorcas reached its zenith. Since then, it is regrettable to note, a relapse in popularity has set in, whether due to the exaggeration by fanciers of certain points, or owing to the fickleness of the public in rushing after the newer varieties, it is difficult to say. It is true that the hardiness and grand laying qualities which, in earlier stages, stamped Minorcas as among the finest utility fowls extant are not so noticeable to-day. In appearance the Minorca is sprightly and alert, somewhat resembling its elder brother, the Spanish fowl, but shorter in leg, and broader and more compact in body than the latter.

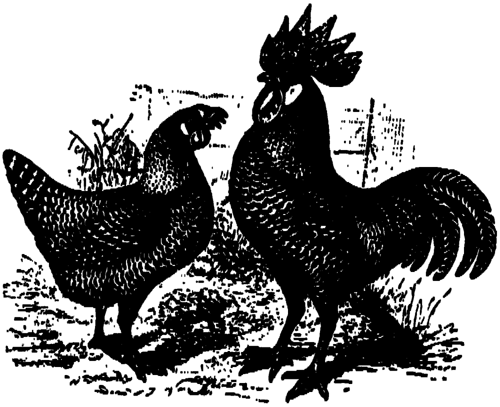
——**SINGLE COMB.** Taking a male bird first, his head must be of fair size and a good width, in order to support firmly the large comb which adorns it; beak of a dark horn shade; eye dark, wide open and sparkling; the comb should be upright, straight and large, neither extending beyond the beak in front, nor touching the hackle behind; its serrations should be symmetrical and pronounced, usually five in number; the flesh is roughish in texture and brilliant red in colour; wattles must be long and full, without creases or folds, nor must the face possess any touch of white, but be of the same brilliancy as comb and wattles; ear lobes are desired as smooth as possible, almond-shaped and flat, pure white in colour, and should feel like a kid glove to the touch; the neck hackles should be full and rather lengthy, whilst the body must be square and compact, with broad shoulders and well-rounded breast, in a standard specimen, whose back will be rather long and broad, and tail be carried well back and be nicely spread; the legs and shanks are fairly, though not too, long and are dark slate in colour; the plumage should be of a deep glossy black all over, more especially in neck and saddle hackles—a green or purple lustre is not desirable. With hens, the ear lobes are, of course, smaller and are a trifle more rounded than in the case of the cock. Practically the only remaining difference of appearance is to be found in comb, which in hens or pullets should hang gracefully over one side of the face, but not to such an extent as to obscure the sight in any way. The standard gives us as average weights: cocks, 7 lbs. (not less); cockerels, 6 lbs.; hens (at least), 6 lbs.; pullets, 5 lbs. Turning to the breeding side of the Minorca question there is little doubt that the largest and most successful breeders and exhibitors use the double-mating system, in order to produce show specimens of both sexes. Some, however, claim that a well-mated pen will produce both cockerels and pullets up to standard form. For cockerel-breeding, the hens are required somewhat high on leg, with a long skull, to which a neat evenly-serrated comb (not particularly, large) must closely adhere, even up to the beak-base; this is an important point, for otherwise cockerels will come with twisted combs.



Comb Guard for Minorcas.

The guard is made of soft copper or brass wire of the above design. At A a silk twist is passed with a needle through the nostrils and the guard is tied in position. The section marked B is wound with waxed string on top to prevent its marking the head. The hook C is to keep the point of the guard from pressing into the comb. D is the front view of a guard for a comb that leans to the left (opposite way to which the guard leans).

The hen's combs should also rise firmly from the head, then lean a trifle to one side, before finally falling gracefully to the other. Lobes must be of the correct shape and texture in both sexes. As regards pullet breeding, the male selected should be good in colour and shape, though his head-points are to chiefly recommend him. His comb must be of good size, and it does not matter if this is carried upright or a little over, but especially must the serrations be good. Plentiful feather is not necessary in the male selected for pullet breeding. In either pen it is essential to rigidly exclude all birds showing white in face or eyelids, white feathers in flights, or such as carry high or fan-shaped tails. The tendency towards exaggeration in the head points of Minorcas has been carried too far. Breeders have found it necessary to dub their best cocks in order to ensure fertility. Comb guards have constantly to be worn by show specimens in order to prevent the collapse of that structure between exhibitions. A cross with the Spanish fowl at an early date led to the white-in-face evil, to avert which breeders had to seek for the old type of bird again, afterwards resorting to much in-breeding, and so weakening the constitution of this grand old breed. Minorca chickens can be left to themselves with ordinary attention, but at five months old it will be time to give extra care and additional shelter for the sake of the lobes. Some little time before commencing an exhibition career, the Minorca should be kept in runs sheltered from all winds and preferably boarded up three feet from the ground. Too much sun is also undesirable. This period of training should not last a moment longer than is necessary (say a month to six weeks), as in no other breed is a brilliant red so important in comb and face, in obtaining which, health and condition are the prime factors. It is also advisable at this period to give a little daily attention to the lobes; these should be gently sponged with mild soap and lukewarm water, and then thoroughly and carefully dried with a very soft towel, special attention being paid to any creases. Thus it is that the best specimens are evolved. There is a White variety of Minorca, probably now better as regards utility than the Blacks from which they sprang, in consequence of their head points being less exaggerated. As these Whites are kept by few and seldom, if ever, exhibited, they do not call for any further remarks. (*See Plates Nos.* 65 *and* 66.)



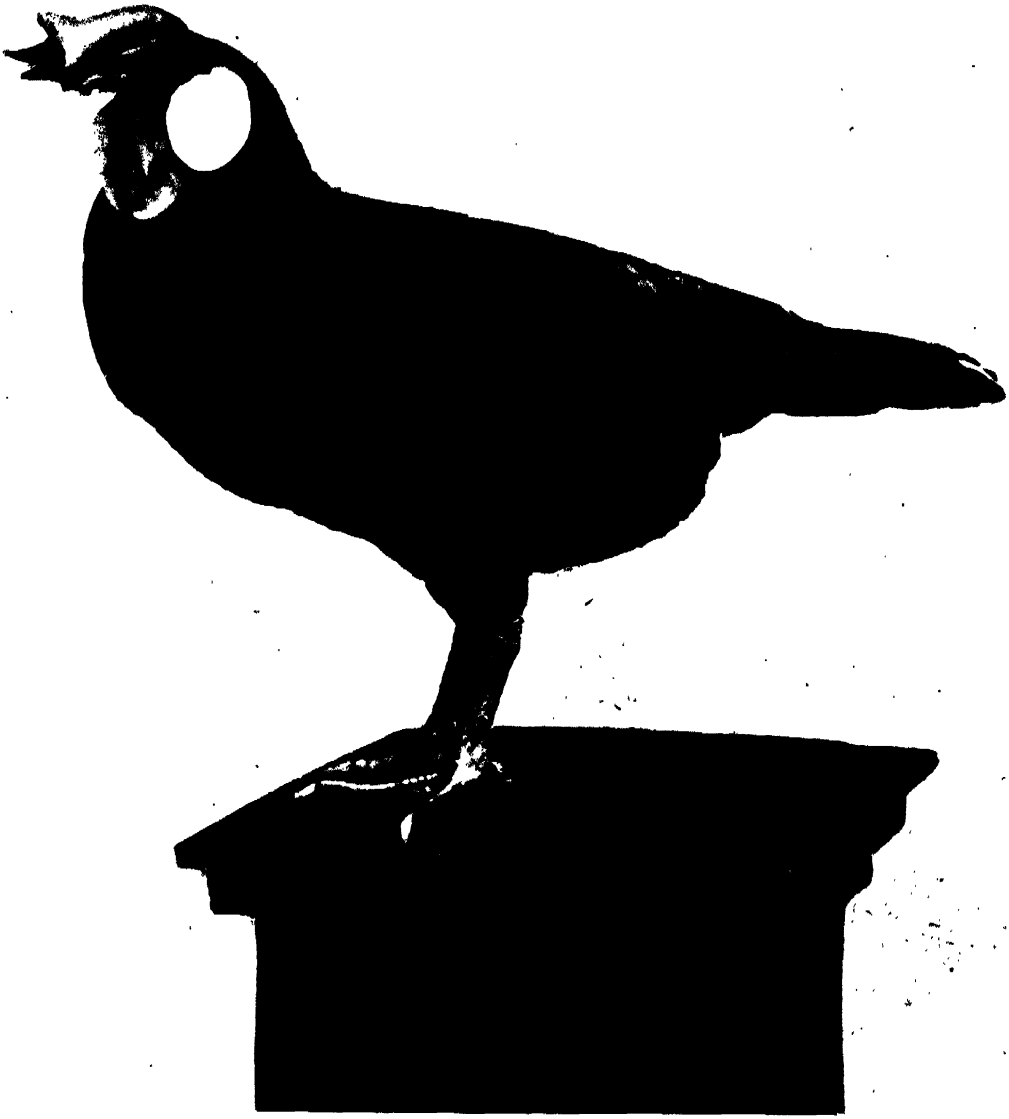
Barred Minorcas.
A recently-introduced American Variety.

—— **ROSE-COMB.** Rose-combed Black Minorcas are like the Single-combed Black Minorcas in every respect except comb.

The breed has been in existence in America for some sixteen or seventeen years, where it was originated by Mr. Geo. H. Northup, of Raceville, New York, who is also a noted fancier of Single-combed Minorcas. In America the breed has become very popular, especially amongst fanciers living in the Northern States of the Union, as the birds are found to stand the severe cold of winter without fear of injury from frost-bitten combs.

It is pretty evident that Rose-combed Minorcas are destined, at no distant date, to become very popular in England.

PLATE No. 66



Single Comb Black Minorca Hen.

(The property of Messrs. Whittaker & Tootill, Quarry Farm, Pool, Leeds.)

A winner of many prizes.

Their undoubted economic qualities are quickly being recognised by all who have taken up the breed. As utility fowls they are prolific layers, extremely hardy both as chickens and adults, are non-sitters, and as table fowls come to maturity quickly, and present a plump breast of delicate white flesh. The eggs generally prove remarkably fertile, and the chickens hatch out well and strong, and make rapid growth. A few words as to size and type of comb may not be out of place, in view of the fact that the rose or double comb is the distinguishing characteristic of this new variety, and also, in view of the question so frequently asked, whether the comb should be large or small. The comb should, undoubtedly, be moderately large, or, in other words, of medium size. It should not be too large, however, because a large, heavy comb is an encumbrance, nor should it be small, because a moderately-large comb is a characteristic feature of the Minorca breed; but of the two extremes, a small, well-shaped comb is preferable to a huge comb. In shape and type the rose-comb should approach that of the Wyandotte family, the spike or leader at the back curving rather downwards. It should be well filled up in front, and be full of "work" on the top. At the present time some forty or fifty fanciers are breeding Rose-combed Minorcas in England mainly for utility purposes; but these birds are also likely to become popular as exhibition fowls. They possess in a marked degree the characteristics which appeal to the poultry-breeder and exhibitor, in addition to their many utilitarian qualities. Fine specimens of the breed are exceedingly handsome. Like the Single-combed Minorcas, appearances may be said to be distinctly in their favour, the substitution of the rose-comb in place of the single-comb seeming in no way to detract from a bird's beauty.

Writing of them in his small work, "Minorcas: All Varieties," published in 1898, Mr. Northup says: "Rose-comb Minorcas are now a valued and valuable variety, and their present owners may be considered fortunate in adopting them early, as there remains no doubt about their future popularity. Four breeders showed them at New York, in February, 1898, the strongest class yet seen together. Rose-comb Minorcas always attract much attention, are greatly admired, and bring high prices when they are sold, as the demand for them greatly exceeds the supply. I know of no variety which promises so great profit for an investment as they do." (*See Plate No.* 67.)

MITES (*see* "Parasites").

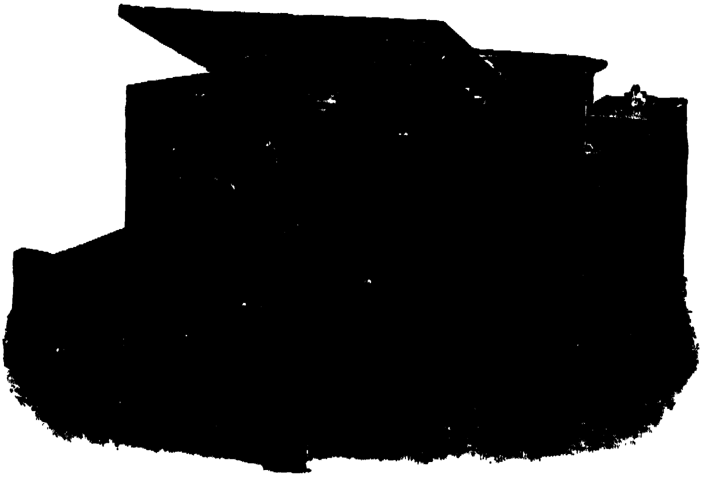
MOISTURE (*see* "Incubation").

MONGRELS (*see* "Breeding").

MONTHLY NOTES. It is of primary importance that the work of poultry production should be conducted according to seasonable sequence in the various departments, and this is as necessary in the case of the man who only produces eggs and meat for his own table or birds for exhibition, as it is for the larger producer who operates commercially. Success so largely depends upon having the produce ready for use or market at the different desirable seasons, and the work is so anticipatory, that the details of that work are apt to be overlooked without some monthly reminder of what should be done at the time, in view of the future object.

——**JANUARY.** The producer for market whose pens and sheds have been more or less cleared by his consignments at the end of the year, should take the opportunity of thoroughly clearing out all the soiled litter (which must be added to the yard mixen) and effectually cleansing the buildings and appliances before further use. The wooden coops and pens may be treated with an application of limewash, put on hot and well brushed and worked into the crevices and corners; and the walls of houses may be lime-washed in the same manner, or if more convenient they can be sprayed with a solution of one part crude carbolic to a hundred parts of water. Only by such means can the parasites be destroyed (or considerably reduced) and the quarters made healthy for the reception of other stock.

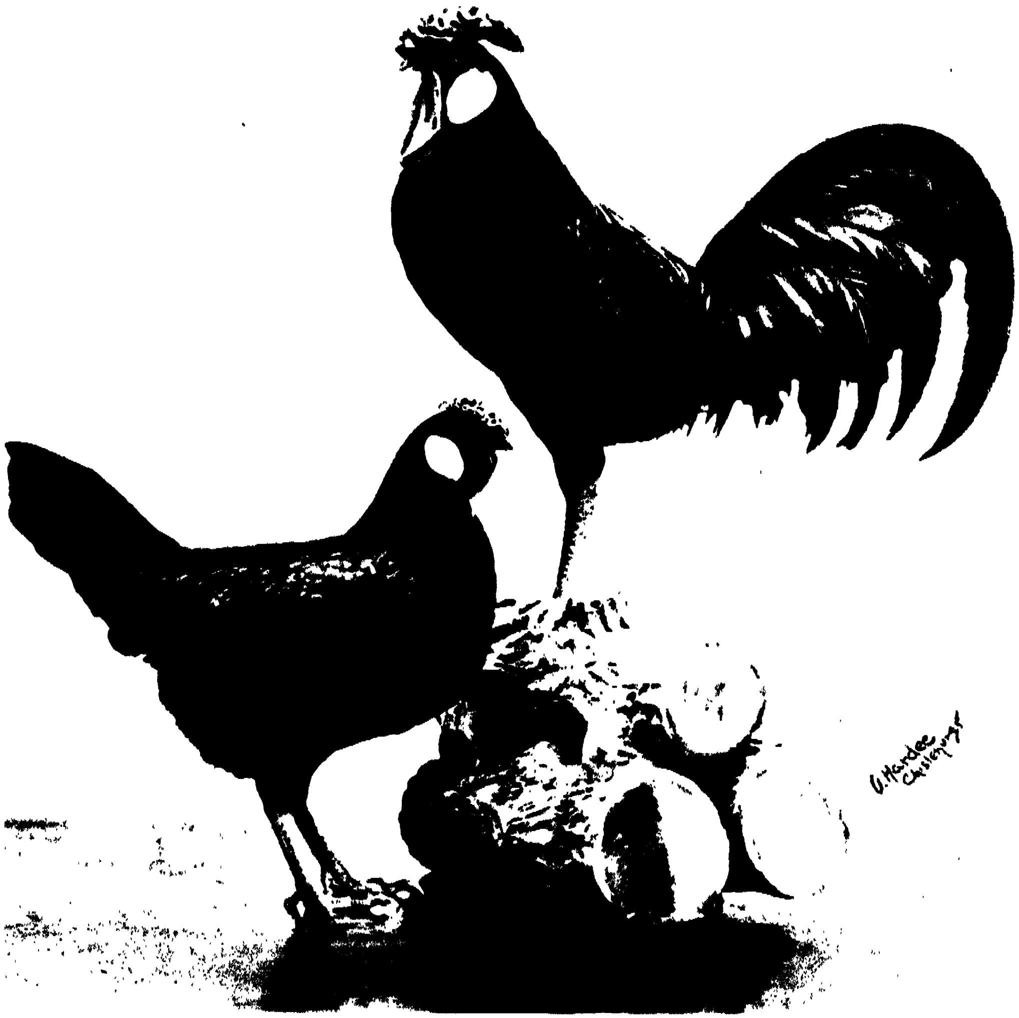
The work of production, although constant, is inevitably carried on more strenuously at some periods than others, and after the rather general clear out consequent upon the Christmas demand, the breeder and rearer begins to devote increasing attention to the beginning of production. In the incubating department a present question is the maintenance of a due balance as between the heat in the incubators and the external temperature. Nature narrows the limits in this particular in the case of the hen naturally sitting upon eggs, the loss of heat being small and evaporation normal, despite weather conditions and seasonable changes; so that for early incubation the use of the hen as far as may be is in the interest of the attendant, whose anxiety and responsibility are lessened, and practically confined to the correct adjustment of the dietary and the adequate management of the hen at feeding time. In the incubator house, however, the operator cannot afford to leave too much to the automatic regulation of the machines in very severe winter weather, and there is need for constant thought and watchfulness—no invention being able to quite adequately reproduce the conditions to which eggs are naturally subjected under hens. It is of the first importance to keep an even temperature in the operating room or chamber, a necessity which renders a cellar a suitable situation—provided it is not unduly damp, and that it is well ventilated; an exposed building will be subject to inrushes of cold air, producing uneven evaporation in the egg drawers, and as a probable sequence there will be a disappointing hatching average. A failure to maintain an even equilibrium is a common cause of a high percentage of what is usually known as "dead-in-shell."



100-Egg Size Hot Water Tank Incubator. (*Tamlin*).
Fitted with Drying Box and Self-Supplying Lamp.

In addition to the adequate setting of hens' eggs, as many ducks' eggs should be put down as are available, it being necessary to hatch as many as possible in February if a good average return is looked for on the total production; and the eggs set should preferably be Aylesbury or an Aylesbury-Pekin cross. In addition to which, towards the end of the month the first eggs should be set for the production of a future laying stock, the hatching of which should not be too closely confined to one period; the most suitable to commence with are probably a few batches each of Wyandottes and Leghorns.

PLATE NO. 67



Rosecomb Black Minorcas.

(*Bred and exhibited by Mr. Tennyson Fawkes, Stonehouse, Glos.*)

Cockerel—Winner of 1st, Special, and Special for best Rosecomb Minorca, Crystal Palace, 1908. Hen—Winner of 1st Crystal Palace, 1907.

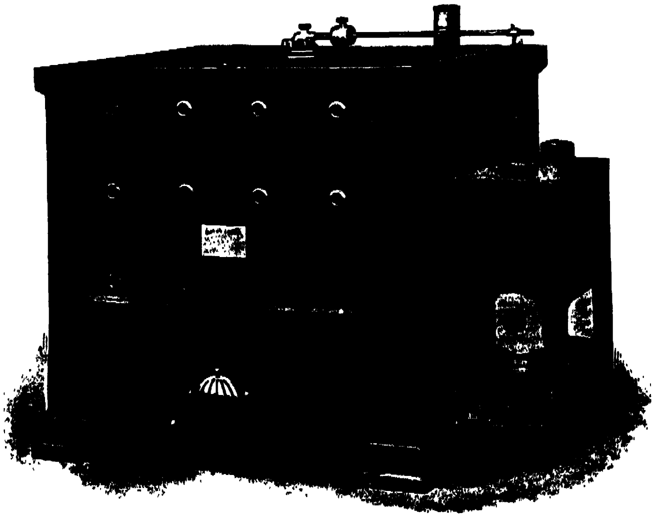
In the mating department attention must now be given to the stock geese, which should be introduced if they have not already been running together; the breeding stock require access to swimming water, and in times of frost some portion must be kept as clear as possible of ice. Nesting places must be provided in quiet corners, and the feeding should be adequate to egg production, which should begin in a few weeks.

Running birds of all ages and descriptions entails some more than usual attention as regards feeding and suitable shelter just now. For the laying and breeding pens a form of scratching shed is desirable, for which purpose the floor of a barn or similar building may very well be used. Young chickens must have sufficient shelter, but must not be too closely confined. Young ducklings, when they arrive, are less difficult, because they do not require so much brooding, and may be confined to well-littered sheds in a way that would not be suitable for chickens.

FEBRUARY. The increasing demands of the hatching season are very often severely handicapped at this time, owing to the scarcity of broody hens, and farmers who neglect the opportunities afforded by artificial appliances frequently sell eggs they would prefer to incubate. Nevertheless, any delay now will make a serious difference in the results, and it would in most circumstances be preferable to turn to the machines at this juncture; and small capacity incubators filled coincidentally with the setting of a few hens will materially improve matters at marketing time. In the cooling of incubating eggs they should not now, as a rule, be left out of the machine longer than the time occupied in turning them, the loss of heat in winter being very rapid—a loss which is not regained in an incubator nearly so quickly as under a hen.

Directly the geese begin to lay fertile eggs, these should be put under hens, four or five eggs under each—preferably four. Nests for setting goose eggs should be made in hollows scooped out of the earth and lightly lined, in which case there will be no necessity to damp or sprinkle the eggs—as is usually recommended.

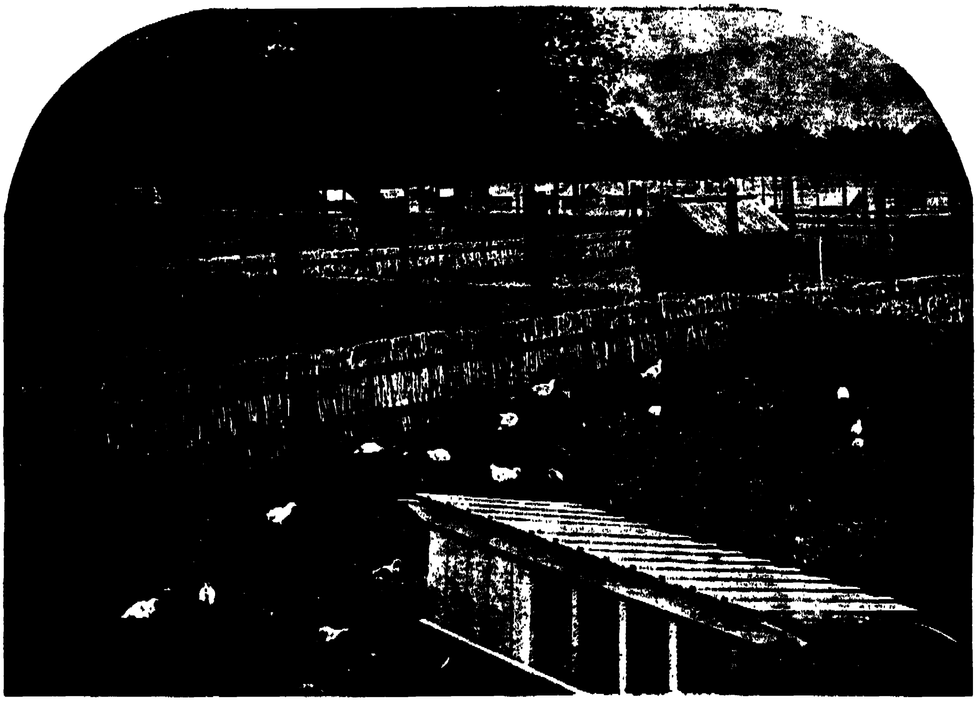
In hatching for the renewal of stock, which was commenced to some extent by the putting down of a few batches of eggs in January, the eggs of the heavier breeds should now be set, according to opportunity and requirement—remembering that more birds should be hatched than will be ultimately required, in view of the inevitable weeding process and the rejection of the unfit. The heavy breeds are not so quick to reach a productive maturity, and the majority of the pullets of such breeds should consequently be hatched in March—with a following in April.



Hot Water Tank Incubator. (*Phipps*).

The care of the breeding stock must be unremitting to maintain a reproductive condition, and the vigour of the male birds in particular must be unimpaired. The stock geese require a plentiful supply of green food when the grass is covered with snow, and the time has arrived for the mating of turkeys in order that they may be well settled for early laying. In the mating of turkeys only matured birds should be used, *viz.:* two-and-a-half years old or more; and an average of six hens to a cock may be allowed, but very heavy males should not be used in breeding, and the birds of both sexes should have straight keels.

All young birds must be kept growing or much valuable ground will be lost. Feeding must commence as early as possible, and the last meal should be given as late as it remains light—indeed a final feed by the light of a lantern is very helpful if the poultryman will only undertake it. The soft food should be given warm in the morning, but not really hot, and it is a good plan to boil up a stock pot overnight, leaving it on the stove, when it will quickly be brought to the required heat in the morning and the liquor used for mixing the various meals employed.



View of Poultry Pens showing the Adaptation of Rushes to Protect Birds from the Winds.

——**MARCH.** Early hatched goslings require cooping in roomy coops upon good, sound, well-drained turf—allowing ample room for the daily and sufficient moving of the broods, which quickly use up the grass in their immediate neighbourhood. Their food for the first few days should consist of soaked bread or biscuit-meal with well-chopped dandelion, and subsequently ground oats may be successfully used—but they soon begin to graze, and hand feeding must be regulated accordingly. The cooping of hens with any class of young stock is a matter requiring some judgment, and they should usually be settled in at night, the young birds being carefully introduced beneath the wings when the mothers have quietly prepared to receive them.

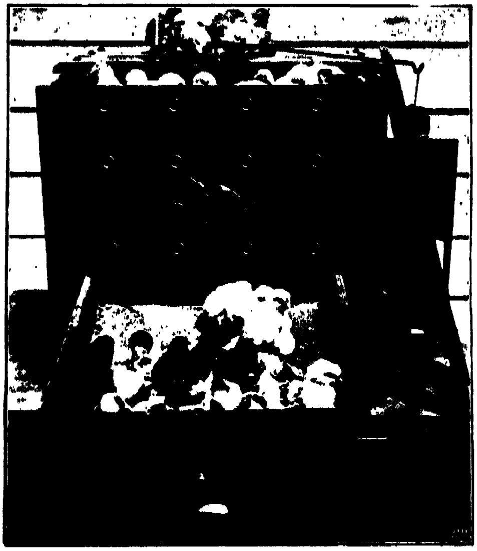
This is often a difficult month for breeding stock and if there is a prevailing east wind the percentage of infertile eggs will largely increase, unless the fowls are well sheltered from its influence ; hot, or rather warm, mash in the morning, and grain fed in scratching material, is the best present method of feeding.

The eggs of the Guinea Fowl, which are usually available from now onwards, may be set under common barndoor fowls, Guinea Fowl seldom incubating until rather late in the season. The young are sturdy and independent, and their feeding should be rather similar to that of young turkeys ; they need a fair proportion of insect or meat foods, and must be protected in wet weather. Their rearing should not, however, be attempted where there is not plenty of room—they cannot stand any conditions of confinement.

Turkey hens must be suitably fed for egg production, the commencement of which is at hand. Early laying is essential if large birds are required for Christmas, and for the purpose it is found that those of April hatching are the best. A good diet for present use would include barley-meal, pea-meal, greaves and skim-milk ; with wheat at midday ; oats or barley at night, with maize at discretion ; and swedes thrown on the fields for them to peck at when they wish.

Chickens in brooders will suffer with diarrhœa if the ventilation is defective and they are overcrowded—the character of the odour noticed when opening these appliances in the morning is a fair test of these conditions. As the birds grow they should, as soon as possible, be removed to cool brooders and hardened off ; and subsequently put out in the ordinary chicken hutches. Those of larger growth should, as soon as requisite, be separated, as regards the sexes, because whatever the object of the production the results will be better than when they are all run on together.

Considerable discrimination is often necessary during the cold months in the matter of feeding laying hens, and in the effort to counteract the climatic influence the feeder often overdoes it and renders the hens so fat that the egg yield dwindles. Winter feeding for egg production is a matter of quality rather than quantity, and foods of a fattening character must be very carefully used.



Hot Water Incubator. (*Hearson*).

——**IN THE HATCHERY.** Eggs of the light breeds should now be put down for incubation, because a good proportion of such stock should be timed to hatch in April; earlier hatched pullets of the lighter sorts usually commence to lay in the summer and then go out of profit, but, as previously suggested, a few earlier birds are available for the preservation of continuity.

Eggs should also be put down now for the hatching of stock ducks, which should be in evidence during this or next month if there is to be an early supply of eggs next season; when hatched, the ducklings reserved for stock may be allowed access to swimming water after the first week or ten days, and with a grass range, must be fed for the production of a good frame, and not in any way forced for a rapid growth. The ducklings now hatched and being reared for market must, on the other hand, be pushed along and matured for market at about their eighth week—being then at their best, under proper management.

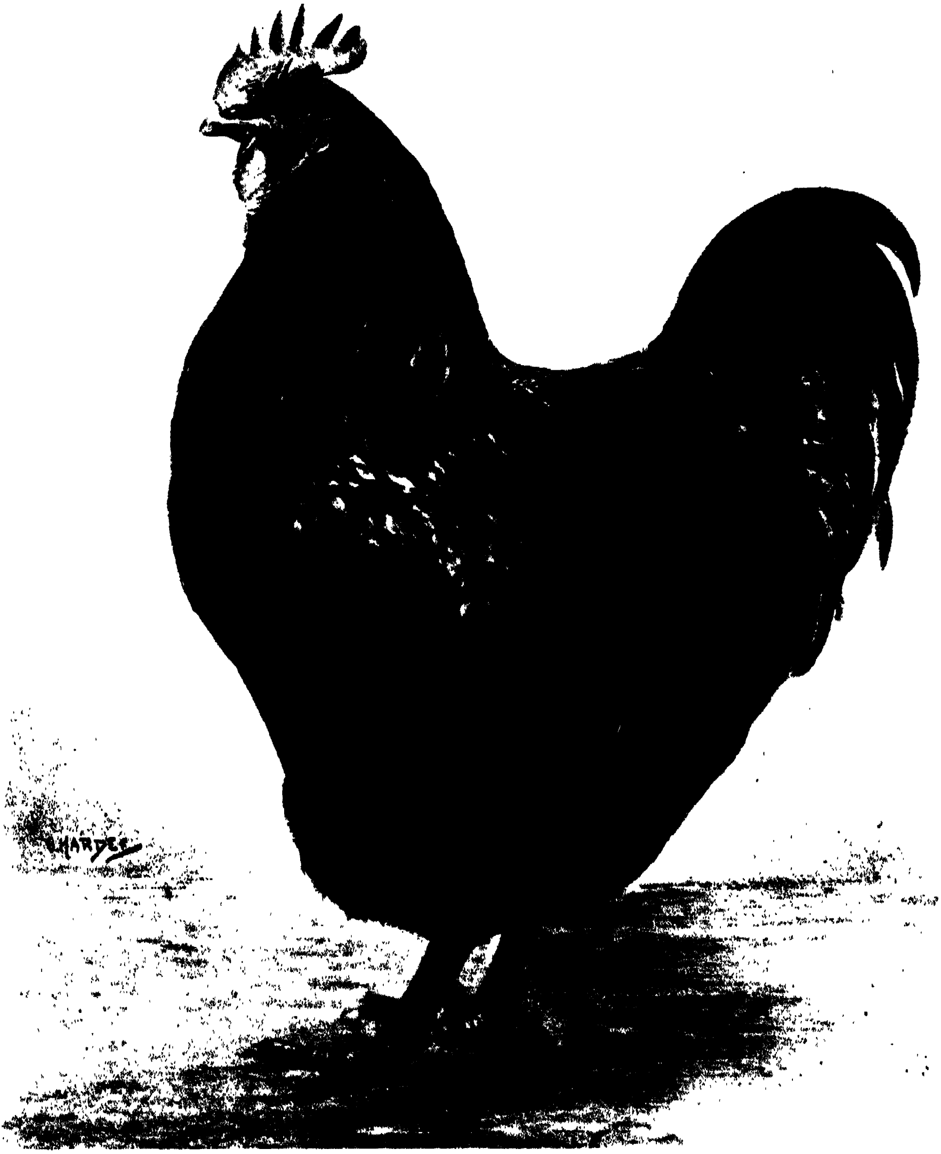
Useful Type of Field House for Growing Chickens.

——APRIL. April is a busy month all round, but especially in the rearing department, in which the work is connected with growing stock of various ages and descriptions, to which each week of the steadily continued incubation is considerably adding. Constant change of ground, more adequate sleeping and sheltering accommodation, and the regulation of the dietary to the various ends of production are among the more important details demanding constant attention. The continued use of incubators and brooding appliances also necessitates some readjustment of conditions in view of the gradual seasonable increase of the external temperature, which is upon the average about ten degrees higher at this period than at the beginning of the incubating season; and although the change is not very materially noticed by the operator the influence upon such machines as incubators is more considerable than may be commonly realized.

Young turkeys, some of which should be hatched by this time, require little food at a time, but they want feeding frequently. For the first few feeds use may be made of hard-boiled egg, biscuit-meal, and well-chopped onions; but they may early be got to take Sussex ground oats mixed with finely-chopped dandelion, the mixture being not sticky, but containing enough moisture to render the supplying of water unnecessary.

Arrears of hatching must, as far as possible, be brought up-to-date during April, and a few more broods of quick-growing breeds may be brought off in order to supply deficiencies for winter laying—for which purpose the eggs of the Ancona are suitable, as well as those of Minorcas and Leghorns. In addition

PLATE NO. 68



Black Orpington Cock.

(*The property of Mr. W. M. Bell, St. Leonards Poultry Farm, Ringwood, Hants.*)

Winner of Gold Medal, best bird in show; Silver Medal, best Orpington; Medal, best Black Cockerel; and 1st, Dairy. Challenge Cup, Cockerel Cup, Medal and Special, Club Show. International, Special, best Black Orpington, and 1st Birmingham. Reserve, best bird in show. Challenge Cup, best Black Orpington; and 1st, Hayward's Heath. Ten Guinea Challenge Cup, old birds; Club Show, Crystal Palace, 1906, etc.

to the current work in this section with the eggs of geese and turkeys, those of the Indian Runner duck may now be set; and more Guinea Fowls' eggs placed under hens.

The man who produces chickens for another to fatten and market should not now neglect to reserve some of his most promising birds for the renewal of his stock, such selected birds being run apart from those being reared for market, and fed more suitably for their future purpose.

As hatching and rearing appliances go out of use they should be thoroughly cleaned and repaired before storing for future use, thoroughly drying out the tanks of hot-water machines, and emptying lamps, cleaning flues, etc.—in the case of rearers particular attention must be given to the destruction of all insect and mite pests.

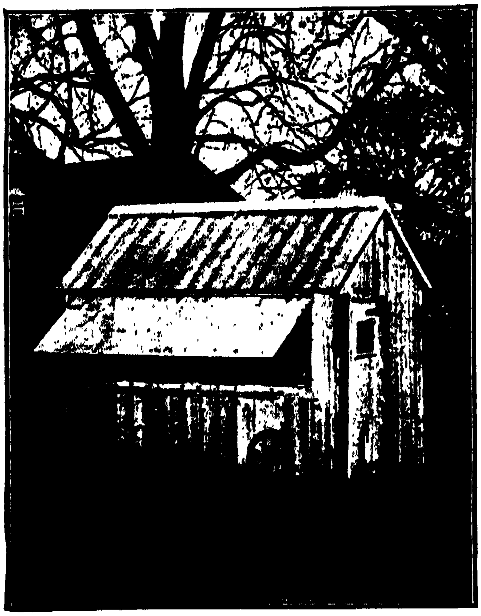
——**MAY.** The breeding stock used for the early production must not be worked too long, and some pens will now be ready for breaking up; to continue breeding from the same birds too long is a frequent mistake, and leads to unsatisfactory results all round. Pens of spring mating should, of course, continue in profitable condition if the birds be vigorous and sound in constitution, nevertheless they should be carefully watched. The birds of such pens as are dispersed must be widely separated as regards the sexes, being placed on fresh ground and allowed to run free to recover condition naturally.

Where rearing has been long continued it is quite time to give the old ground a rest, and the birds the advantage of a new run; nevertheless, the more recently hatched chickens should be, as far as possible, under observation and away from cover, in view of the risks of attack from vermin and birds of prey—the latter being a trouble at this season. The early hatched cockerels should be sorted through now and selections made for stock, and rejections for market. The pullets reserved for future laying must be carefully fed, and in no way must the production of size be encouraged.

When Guinea Fowl chicks are hatched their feeding at first (which must be frequent) may consist of a crumbly soft mixture such as is fed to chickens—using Sussex ground oats, biscuit meal, sharps, meat meal, etc. The growing turkeys, from their second week of rearing, may be given a small quantity of cracked corn in order to accustom them to grain feeding, but continuing as a matter of course the soft food as the chief portion of the dietary. The goslings require careful watching or they will soon outgrow their housing accommodation, and as soon as convenient they should be got out of their coops or hutches and driven at night into well-littered sheds, being also, when large enough, turned afield to graze.

With the increasing temperature the hardening off of all young stock should be forwarded as much as possible, and coops and rearers dispensed with at the earliest possible opportunity afforded by the weather conditions. If the weather is seasonable all young birds should make steady and rapid progress now, without much anxiety to the poultryman; but vermin must be guarded against, and everything done to promote health. Such ailments as cold, roup, bronchitis, etc., are, however, liable to occur when the conditions are in any way unsuitable or unhealthy. Diarrhœa is also a risk of present rearing, resulting from overcrowding, bad ventilation, impure water and dirty surroundings.

——**JUNE.** In commencing the weeding out and marketing of old hens, the sorting of the male birds must not be forgotten, and as the breeding pens are broken up the cocks that are not required for future service must not be retained when once they have attained a saleable condition. If, as frequently happens at this season, there is any set-back in the growth of the young stock, a change of ground is often all that is required to remedy matters. Ducks must have meat in their food if a continuance of laying is required, and ducklings must not be subjected to the noon-day sun. All winter-mated pens of breeding stock should be dispersed, unless production has been hindered; but, as a rule, the eggs of spring-mated birds are more reliable as time advances. Early feeding and releasing from sleeping quarters are now imperative.



Portable House.

The illustration presents the latest form of portable house. The house is shown resting on the ground, but is so made that three wheels may be quickly adjusted when the house may be raised and moved to a new location.

The whole question of feeding in the several departments is one which requires serious consideration as the seasons change. At about this time it often happens that growing chickens are receiving too many meals, and that the dropping of one in view of altered conditions would not only be economical but very beneficial, a great fault of the novice being a too frequent and too liberal allowance. When young birds "go off" their soft food, it is advisable to try a small grain diet and a reduced allowance of mash, by way of change.

At this time the stock of many breeders is becoming crowded, so that there are many favourable opportunities of acquiring surplus suitable birds at a reasonable figure; nevertheless, the purchaser should assure himself that the fowls bought are of a breed or strain likely to produce results in accord with his object; the mere fact that a bird is bred in a certain yard is an insufficient guarantee without some record of the course of breeding of the ancestry.

As soon as the hay is carried the colony houses, or chickens put out to run, should be transferred to the clean sweet ground thus rendered available; for the latter in particular there is a variety of suitable natural food to be found on a fresh-cut meadow, and such a situation is perhaps preferable to that of the stubbles enjoyed by birds of a later growth.

The night temperature is now usually rather high, and full use should be made of the opportunity to allow the free admission of fresh air afforded by the modern type of fowl house; shutters should be removed, the front left open, with its adequate protection of wire-netting.

Portable House.

The same portable house is here shown raised upon three wheels and ready to be moved. After the house has been moved to the desired location, it is lowered and the wheels removed until needed again.

The moulting process may commence at any time now, according to the various influencing factors; and for the general purposes of the poultry keeper an early moult and recover are most desirable. The egg producer is favoured by a recovery of condition during open weather, and the exhibitor knows the advantage of new plumage in time for the autumn shows; so that when the conditions are unfavourable to its natural consummation, the process may be hastened by confinement to a warm shed—not too light, a reduction of feeding sufficient to stop laying, and a subsequent generous diet of soft food with linseed and vegetables.

——**JULY.** Relative to pullets and the regulation of the egg supply, the method of feeding seldom receives sufficient consideration. Apart from questions of breed and strain, and the importance of the hatching date, much disappointment is occasioned by the subsequent neglect to adapt the food to the particular requirements. Feeding stock of all ages and descriptions at the same time and out of the same food bucket is inimical to the interests of each separate interest, and if market chickens and pullets reserved for laying are subject to a similar treatment, the soft food mixture that hastens the growth of the former frequently forces the commencement of egg production in the latter—before a suitable maturity is attained. The pullets, when run under ordinary free conditions, should be grain fed from the age of about three months, using the various grains in succession and not in one mixture; and in early autumn when eggs are required, a return may be made to a soft food mixture—for early feeding hot—of a character suited to the object.

The "shooting of the red," which is a critical period in turkey rearing is in course of progress at about this time, and some extra attention is necessary to bring the young birds successfully through the period; but when the fleshy tubercles on the head and the carunculated growth over the bill, have once developed, the young stock may be hardened off without fear of delicateness. A wide free range is then desirable and favourable to a full development and growth of the bodily frame, and their foraging habit both assists them in this direction and reduces the food bill to a considerable extent.

Chickens naturally run on grass and well and generously fed will generally feather successfully without any perceptible effort, but the period is often a trying one to brooder-reared birds, and their progress is frequently hindered on that account. Trouble in feathering is frequently a result of impaired digestion, and is often accompanied by some bowel derangement; the best preventive is a hardy open-air treatment, correct feeding and plenty of grit and vegetable food. Young stock must not now be housed in a too-exposed position or anywhere away from sheltering foliage or the heat of the sun will try them even more than other weather conditions, but rearing in summer is an easy undertaking amid suitable surroundings, the best description of summer for the rapid progress of young birds being a showery one—the showers alternating with bright sunshine.

——**AUGUST.** Whilst the weather continues fine some thought should be devoted to future requirements as regards houses and pens, and building, repairing, tarring and similar work should be completed before the autumn weather tends to hinder such outside occupations.

Wheat, barley and oat stubbles must be gleaned by the farmer's poultry in preference to the owner's game; and as each field is available it should be quickly stocked with fowls of some description. Turkeys may be turned out to "shack" upon the stubbles, and will do well in such a situation, as also will a flock of geese; but where neither are kept, the growing chickens will thrive upon the change of ground and diet, and laying hens will, under such circumstances, produce eggs economically. When, as sometimes happens, there are signs of leg weakness in the forward chickens it is in most cases an indication of faulty feeding and a lack of bone-forming material in the food—a forced growth will often produce such a result. If the trouble is severely developed it is better to kill the affected birds than to attempt a tedious cure, and the probability is that a form of chalky gout may be developed before the course of the complaint can be arrested. Diet errors may, however, in slight cases, be regulated with beneficial results, fattening foods being struck out of the dietary, and a little chemical food added to the drinking water—the calcareous material being also increased in supply.

When incubation is carried on through the summer, either by the use of hens or machines, careful management is essential to success; and it must be remembered that there is a considerable difference in the conditions, as between a hen sitting in the open and an incubator enclosed in a building—here again the cellar is preferable to the exposed shed or room, neither of which will maintain so even a temperature as the underground chamber.

The well-grown goslings for use next month must now be fed to cover their frames, the development of which has occupied the previous period of rearing. Upon a good range they may still be run at liberty, provided the search for food does not entail too severe exercise; and the rearer's chief consideration is the requisite quantity and quality of hand food to produce the best result at the proper time. Under ordinary farm conditions, a morning feed of ground oats and sharps, with sound grain at night, should answer the purpose. Turkey poults must not be neglected, or the subsequent fattening will be inadequate; they must be progressive all along the line if sufficient weight is to be attained to secure the highest prices, a useful present soft food mixture for these birds being ground oats, sharps, barley-meal, boiled potatoes and some green cut bone. The stock ducks should have a good grass range as soon as they have got over their moulting, and fed on bran, sharps and rice, with a little grain at night—but fattening foods must be avoided.

Always at this season, and during a continuance of hot weather, all fowls are especially liable to the attacks of parasites, which multiply exceedingly just now; and a sharp look-out must be kept for insects and mites of all descriptions, remembering that some of the most troublesome are partial parasites—leaving the birds during the hours of daylight and seeking refuge in the hiding places of the coops, houses and nest boxes.

—— **SEPTEMBER.** In view of the desired commencement of egg production the character of the food fed to the early-hatched pullets must now be altered to meet their requirements in this direction, and with the reddening of their combs care must be taken to prevent birds laying away from the proper nest boxes, which should have been already provided. Simply for the purposes of eggs for table the pullets will not, of course, require the presence of a male bird in their pen, but otherwise the selection of suitable males must not now be delayed. Relative to the period at which production should commence, pullets should not be encouraged to lay until they are six months old; and at this time the March-hatched should be fed for an early beginning, but the younger birds (being run and fed separately) must be as far as possible prevented until later. When premature production is anticipated, the fowls should be removed to fresh surroundings, and only allowed sufficient food for bare maintenance.

The condition of the stock geese must be a matter for current attention, the period of production and rearing being past—and the moult probably in progress

PLATE No. 69

Black Orpington Hen.

(*The property of Mr. W. M. Bell, St. Leonards Poultry Farm, Ringwood, Hants.*)

Winner of Gold Medal, best clean-legged bird in Show (over 2,300 birds competing), two Silver Medals and 1st, Dairy Show; and in other hands) 1st, Club Show.

—a rather liberal diet (as regards quality) must be allowed to enable them to recover a good hard condition before the winter. Moreover, the turkeys and all other breeding stock should be fed for the maintenance of condition, it being a bad and uneconomical system to neglect fowls not immediately in profit.

In preparing for the autumn mating of fowls the proportion of hens to the cock bird must be considered, if the object is to secure strong full-sized chickens ; and no male bird should be mated to too many hens, or too few—an error in either direction being often sufficient to defeat the whole object. Among other factors influencing the most desirable proportion are those of breed, season and general conditions ; and it must be remembered that fewer hens are desirable in heavy breeds than in those of light build. As a rough guide, subject to individual and local modifications, it may be taken that good results will usually follow the mating (in heavy breeds) of from six to eight hens with a cockerel ; and (in the light breeds) of from eight to twelve. In mating with an old cock, the hens or pullets should be reduced in number by about two in either case—but a great deal depends upon the character of the male bird, which must be considered in every case.

Only healthy and well-matured birds of either sex should be mated, otherwise the progeny will be undersized and lacking in stamina ; and it is the general experience that second season hens produce the best offspring. The novice should bear in mind that the most typical cockerels and pullets of a breed are not often produced by the same mating, and that the chief characteristics of the progeny depend to a considerable extent upon the parent that possesses the stronger influence and power of transmission ; so that a dominant male most strongly influences the character of the cockerels, the pullets more nearly resembling the hens, the opposite result being obtained if the influence of the hen predominates.

——**OCTOBER.** In addition to finishing all the work of building and repairing houses and appliances required for use during the winter, opportunity must be taken of suitable weather for the cutting, carrying and storing under cover of bracken, heather and other suitable litter for bedding roost houses and sheds during winter. Enclosed runs should be looked to before the winter arrives, and where the surface soil needs renewal or a gravel surface is required, the work should be proceeded with without any further delay.

All colony and other movable outlying houses, that are to be permanently left on the fields, should be placed in favourable positions as regards sheltering woods and hedges, before the soil becomes too soft for easy removal over a considerable surface. In this connection the experiences of past winters must be remembered and the best drained and most easily accessible situations chosen—in view of the comfort of the birds and their attendant. If colony houses are being used for the first time it is better to buy them from an appliance maker than to attempt their home construction, selecting a sectional design such as merely requires bolting together, and insisting upon a sufficient size and width of wheels—even if they cost more ; small wheels with narrow rims are useless for field work.

The usual condition of moisture which is characteristic of the grass in the early morning at this season is liable to be harmful to young chickens, and those who undertake autumn rearing would do well to attach a covered run to their coops for early morning use, by the use of which the young birds may be restrained until it is deemed safe to allow fuller liberty when the sun has gained some power. Young birds are particularly liable just now to roup, in one of its various forms, a troublesome complaint which often develops from a common cold contracted by the sudden change of temperature—from the sleeping quarters to the exposed run.

Users of artificial brooding appliances will experience some amount of difficulty on account of the extremes of temperature so often noticeable between a fine autumn day and the succeeding night, and by far the safest plan is to visit brooders or foster mothers late in the evening in order to observe the behaviour of the inmates (as well as the evidence of the thermometer)—overheated birds will show signs of distress in breathing, and the underheated will be huddled in a heap.

In the breeding pens particular attention should be directed to the stock intended for exhibitional production, and the birds should soon be mated up so that the eggs may be reliable when wanted ; and for the accommodation of this stock a large grass range is desirable as being conducive to stamina in the progeny. For the production of early ducklings the Aylesbury or Aylesbury-Indian Runner ducks should now be mated, and the proportion of ducks to a drake must not be unduly large or fertility will suffer.

——**NOVEMBER.** Those who have stock in preparation for the Christmas markets will now begin to be increasingly busy with each succeeding week until the end of the year. The turkeys should now be spared any surplus milk for the mixing of their meal—barley-meal, middlings, mashed potatoes and Sussex ground oats being used ; the geese may be put on a diet of barley-meal and brewer's grains, and the ducks will fatten well on the usual soft food mixtures. When the birds are first penned for fattening it is desirable to fast them during the first day, and they will then more readily settle down to the new conditions if their first meal satisfies a real hunger, and if the sexes are separated a better progress will be made. Unhealthy birds will not respond to the treatment, and the healthy will require careful management to maintain and improve condition.

The attention required to keep adult stock in productive condition must at no time be relaxed, especially at this season, when so much depends upon the vitality of the breeding pens. The character of the feeding is an important factor and it is necessary to avoid forcing foods whilst gently encouraging production. The housing must also be adequate as regards size and comfort, a scratching shed being a present necessity in many circumstances. The laying stock should have a warm morning meal of ground oats, sharps, and meat of some description, with sound grain at night—wheat, oats, and maize fed separately, and the latter sparingly. The necessity for a midday meal must be a matter for individual judgment, but with a good range it should be unnecessary.

——**DECEMBER.** This is the great marketing month with most producers of table poultry, and for details of the work concerned the reader should refer to the section "Marketing" and the other articles dealing with kindred subjects. The current work in connection with layers and breeders must be kept well up to the mark, despite the many calls of the season upon the poultryman's time.

In many circumstances incubation is in full progress already in preparation for the spring chicken trade, and whether the hen or the incubator be in use adequate attention must be given to ensure success at a difficult period for incubation. Not only is the commercial aspect of production under consideration, but the producer of exhibition stock must now be busy in the incubating section—preferably using hens for his purpose and not burdening them with too many valuable eggs, setting only enough to produce an average of six or seven chickens, which at the turn of the year will be more successfully reared for the purpose than a larger number. In any case, and for any object, experience is essential to the success of incubating and rearing in winter, and the attention to all details must be personal and constant.

In the matter of the layers, the egg yield depends very largely upon the climatic conditions, both as regards quantity and quality, but unfavourable weather severity may be largely counteracted by common-sense management in feeding and sheltering. The erection of wind-breaks and shelters becomes imperative in bad weather, if it has not received previous attention; the character of the feeding must be maintained, and include meat and vegetables; and all eggs must be collected before the frost affects them.

MOSSY. Indistinct feather colouring.

MOULTING. Once every twelve months adult fowls completely cast their feathers, these being replaced by an entirely new set, and this period is termed the moult. While the birds cannot rightly be said to be ill during this time, it is nevertheless a somewhat trying period, and neglect may have very disastrous consequences. A common cause of indifferent winter laying is that the hens have been improperly looked after while they were casting their feathers, making them backward and unable to withstand the trying conditions of winter. When they are carefully looked after, and suitably fed and housed, they quickly recover and suffer no injurious effects.

The natural time for fowls to moult is during August and September, but it is possible by good management to hasten the process a little, which ensures the completion of the process in plenty of time to allow of winter laying. When stimulating foods are employed the hens continue laying right into the summer months, while, on the other hand, if they are supplied with only a small quantity of food low in albumenoids and carbo-hydrates, no eggs will be produced, and the feathers will commence falling towards the end of June or July. As eggs are extremely plentiful during the summer, it stands to reason that more money will be made if the hens moult early, as they are then ready to begin laying in November, when eggs are worth twice as much as they are during June and July. One of the reasons why young hens are more strongly recommended than those in their third or fourth year is that the former obtain their new feathers considerably sooner. A healthy pullet in a lean condition takes no longer than about six weeks, whereas an old hen takes three, and sometimes even four months to complete the change of feathers. If a pullet, therefore, commences about the first week in August, she has finished by the middle of September, which is plenty of time for her to entirely recover her old form ere the cold weather sets in, and she is ready to commence laying the end of October or during the first half of November. With an old hen, on the other hand, even though the moult is forced somewhat, and the feathers begin to drop about the first week in July, the process is far from completed by the beginning of October, greatly reducing the chance of securing any eggs during the winter. Some varieties take much longer to pass through the moulting period than others, the laying or non-sitting breeds being generally a fortnight or three weeks quicker than those that are heavy and somewhat lethargic, such as the Orpington or Wyandotte.

During the first part of the moulting period the foods supplied should be poor in quality and quantity, as the aim is to get the feathers to fall as rapidly as possible. A good ration for morning use is two parts middlings, one barley meal and one bran; in the afternoon a small quantity of wheat or oats should be given. As soon as the new feathers are being formed, however, the foods should be changed, and those of a concentrated character supplied. Meals and grains rich in albuminous or nitrogenous matter should be employed, as these assist so greatly in the formation of feathers; carbo-hydrates and fat are not required at this period, and foods containing a generous proportion of these elements should be avoided. A good ration for use first thing in the morning consists of four parts middlings, two barley meal and one pea or bean meal. Pea and bean meals are extremely rich in nitrogenous matter, and they serve a useful purpose at such a time. An occasional feed of split beans is very beneficial, and greatly encourages the new growth of feathers. Green food must not be stinted, and a liberal supply of lettuces, boiled nettles or the tender leaves of cabbages should be provided.

As moulting takes place during the summer, when one may reasonably expect warm weather, there is nothing very special to note regarding the housing. It is necessary, of course, to keep the birds warm at night time, and on no account must they be subjected to draughts. There is no better form of house than the open fronted one, as this allows an abundance of fresh air to enter without exposing the birds to any draughts. A covered shed attached to the sleeping compartment is a great boon, as this enables the hens to secure all the exercise they want without venturing on wet days into the open. It is necessary to protect them as far as possible from getting wet, as repeated exposure to the rain or to long wet grass very seriously delays the process. It is almost as important to protect them from the sun as from the rain and draughts, and plenty of shelter must be provided.

It is an excellent plan to give the birds a little sulphate of iron and sulphuric acid, as both have a beneficial effect, and hasten the process somewhat. The simplest way to give it is by adding to the drinking water, in the proportion of one piece of sulphate of iron the size of a walnut, and ten drops of sulphuric acid to a gallon of water. A tablespoonful of powdered flowers of sulphur for every twenty birds keeps them in good condition.

MUFF. Same as Bib.

MUSCOVY (*see* "Ducks").

NARRAGANSETT (*see* "Turkeys").

NATIONAL POULTRY ORGANIZATION SOCIETY LIMITED. This society was founded in 1898 for the purpose of improving the system of marketing generally followed in Great Britain, with a view to meeting more adequately foreign competition. At that period it was evident that whilst a great deal had been done for improving production in poultry produce no corresponding advance had been made in the methods of marketing, whereas in the great supplying countries on the continent of Europe there had been a great change, which had considerably shortened the time necessary for the eggs to reach the English markets. The society was the result of a meeting held at the residence of the Viscountess Cranborne (now the Marchioness of Salisbury), which was addressed by Mr. Edward Brown, F.L.S., and at that meeting the importance of taking some steps for securing a more expeditious method than the weekly marketing system was emphasised. From the outset the society commanded a considerable amount of attention, as the need for some such organization was apparent. It had the advantage of securing the influence and support of well-known people, including the Marchioness of Salisbury, who has been president from the outset, and many others, too numerous to mention. The first secretary was Mr. Reginald Bourlay, now poultry expert to the Transvaal Government, and in 1899 Mr. Edward Brown, F.L.S., was appointed to that position, which he has held from then onwards. It was necessary to inquire what steps should be taken, the result of which was to show that the weakest points arose from the slow methods of marketing adopted. For probably centuries it has been customary in this country for producers to take their eggs,

PLATE NO. 70

Buff Orpington Cock.

(*Bred and exhibited by Miss N. Edwards, Coaley Poultry Farm, Coaley, Glos.*)

Winner of 2nd Dairy Show, 1907, in class of 56 Buff Orpington Cockerels; 1st and Poultry Club Challenge Cup for Best Orpington in Show, Leamington; 1st and Buff Orpington Club Special, Manchester; 1st and Buff Orpington Club Special, Cheltenham.

View of an N.P.O.S. Depôt.

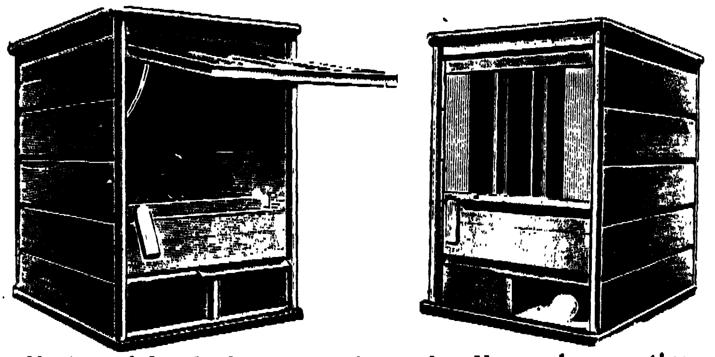
butter, etc., into the local market and there sell either direct to householders or tradesmen. So long as foreign competition was a negligible quantity, and the consumption was in the immediate locality, that system was satisfactory, but with the great increase of intercommunication, and the realization of the importance of rapid marketing on the part of foreigners, it became true that frequently eggs from Denmark, France and even Italy were fresher than those produced within a few miles of the point of consumption. The methods adopted to secure an improvement received a large amount of attention, and it was found that by combination local producers in co-operative societies could best secure the end in view, and therefore the society set itself to advocate co-operation on these lines. The work was, however, very difficult indeed owing to the fact that British farmers were adverse to combination and seemed afraid of people knowing what they were doing. To that end a large amount of missionary work had to be undertaken, of which we are seeing the results, for in nearly every section of the country where societies have been established the whole standard of home produce has been raised, and traders as well as producers have come to realize that in order to hold their own they must advance with the times. A further point is that as a result of better methods of marketing and of improving qualities, the demand for poultry produce has grown enormously and to a much greater extent than the supply: hence prices have advanced very considerably, and it has been found that in almost every district where local co-operative societies have been formed that producers have secured an increase equal to 30 to 40 per cent. for their eggs and chickens over what had been obtained previously. The society is registered under the Industrial and Provident Societies Act, and whilst it does not trade itself, has a marketing section which looks after the interests of its members and affiliated societies. It has done much to stimulate poultry production in this country on practical lines ; has disseminated information throughout the country; publishes a quarterly journal, and the secretary has made two reports—one dealing with the poultry industry in America, and the other with poultry-keeping in Denmark and Sweden; it issues leaflets, and is in closest association with the Agricultural Organization Society Limited, which latter body undertakes the formation of collecting depots. The president is the Marchioness of Salisbury; treasurer, Col. R. Williams, M.P.; honorary secretary, Mr. Edward Brown, F.L.S. The offices are at Regent House, Regent Street, W., and the annual subscription is 5/- per annum and upwards.

NEST-EGGS (*see* "Nests—Sitting").

NESTS, RECORDING. No appliance introduced of late years has had, and will have, greater effect upon the poultry industry of this country than the recording nest. It is a sign of the times that of late there has been a decided movement amongst the poultry-farmers in favour of the adoption of this—to be—indispensable article, and as a natural result, many new and improved trap nests have been placed on the market. Roughly speaking, the recording nest may be said to be fifteen years old, and

View of an N.P.O.S. Depôt.

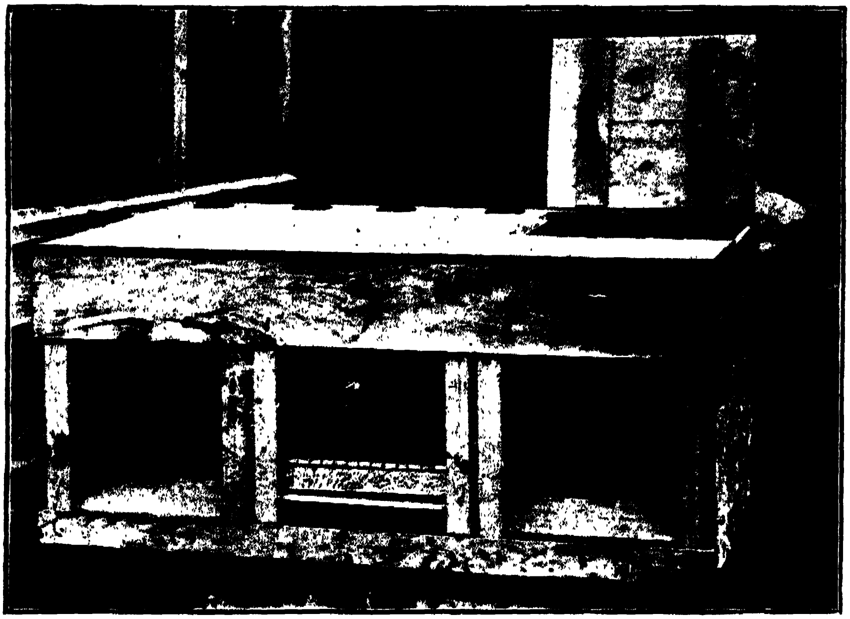
The "Heaton" Recording Nest.



Nest used for dual purpose of trapping Hen and preventing Egg-eating. (*Spratt's Patent, Ltd.*)

The "Cairnie" Recording Nest.

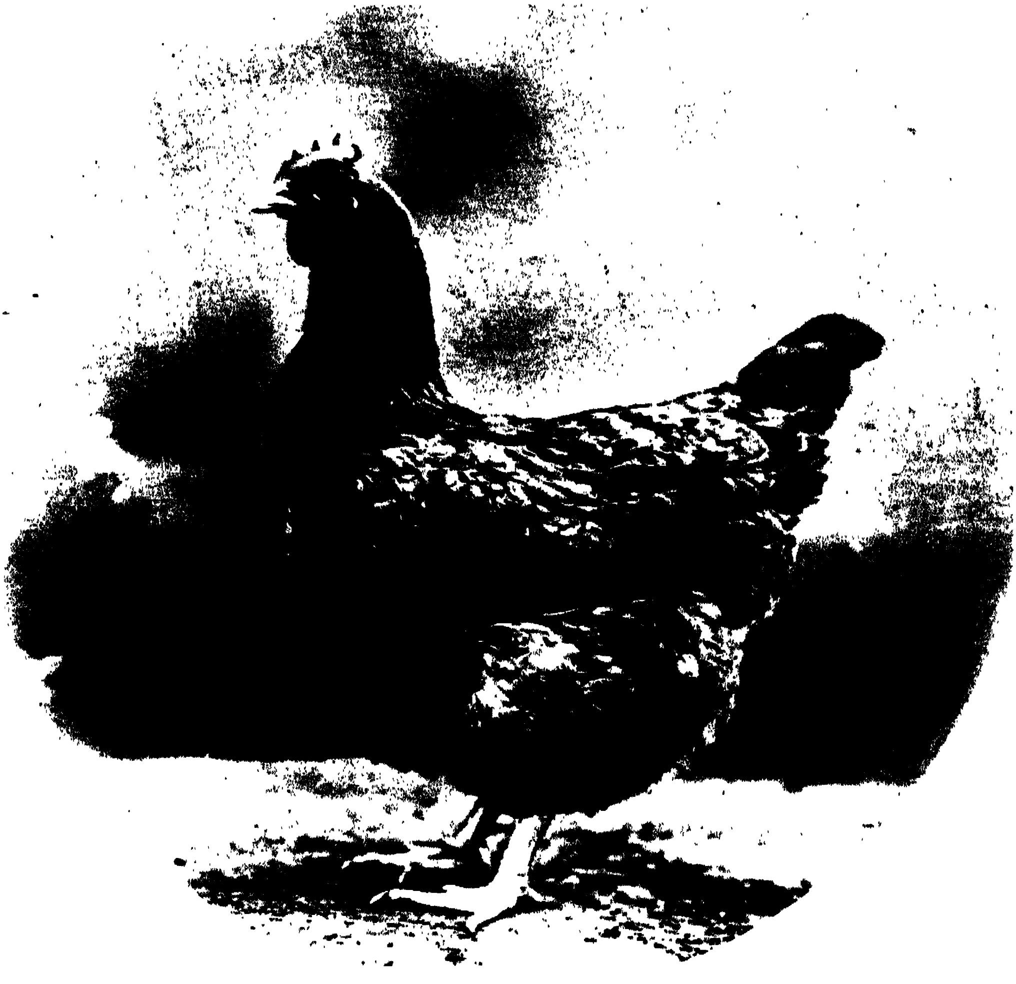
like many other useful inventions, the honour of its introduction may justly be claimed by the United States. In fairness to this country it may be said that "registering" nests, of more or less primitive designs were in use prior to the above date, but no one appears to have had the courage to introduce and champion its cause as a money-making invention. Possibly this was due in a measure to its unreliability and to the lack of support on the part of writers on poultry matters. The recording nest, or trap nest, by which name it is more popularly known, is no longer an experiment. Its efficiency and practicability have been proved in recent tests, notably in the Utility Poultry Club's Annual Laying Competition, and after a thorough trial, the foremost breeders of poultry, throughout the world, proclaim it a most valuable aid in establishing a strain of fowls which attain the highest possible degree of perfection. The value of a hen as a producer of market eggs depends upon the frequency of her laying and the quality of the product. Recording nests enable the user to ascertain the actual laying abilities of each hen and to weed out for table use all those which do not produce enough good eggs to pay a fair profit over the entire per-hen cost of their keep. The value of the hen for breeding purposes depends upon her ability to produce hatchable eggs and offspring of high excellence. Recording nests show which hens give a high percentage of fertile eggs and produce the chicks which develop superior qualities of any kind. By the aid of this appliance the breeder is able to make each mating an individual mating, without penning special hens separately; to ascertain which ones are responsible for infertile eggs, and which to credit for good results. Thus only may pedigree records of absolute reliability be practically obtained. The system of pedigreeing individual birds, which can only be secured by the use of recording nests, is also a help to the fancier. The hens which produce the largest number of exhibition chicks can be noted, and when mating the breeding pen the next year the best chicks raised from them should be given preference over the others. The aggravating habit of egg-eating, which is sometimes prevalent in flocks, may be prevented by the use of the recording nest. The first hen which breaks and eats eggs may be detected and removed from the pen. Darkened, as the nests usually are, the chances of the hens learning the egg-eating habit are materially lessened. The best recording nests are constructed so as to prevent more than one hen occupying the nest and breaking the eggs contained therein. In selecting a nest it is well to consider the following important points: Simplicity, accuracy, durability and convenience. Above all they should be so constructed that the egg from each individual hen can be noted. It should be simple in operation, with no complicated device which would easily get out of working order. It should be convenient for the attendant to release the hen and readjust the nest. Much has been said about the time and cost of using the recording nest. Some



The "Hinwick" Recording Nest.

Type of Payne's Recording Nest.
Used in the Utility Poultry Club's Laying Competition.

PLATE No. 71

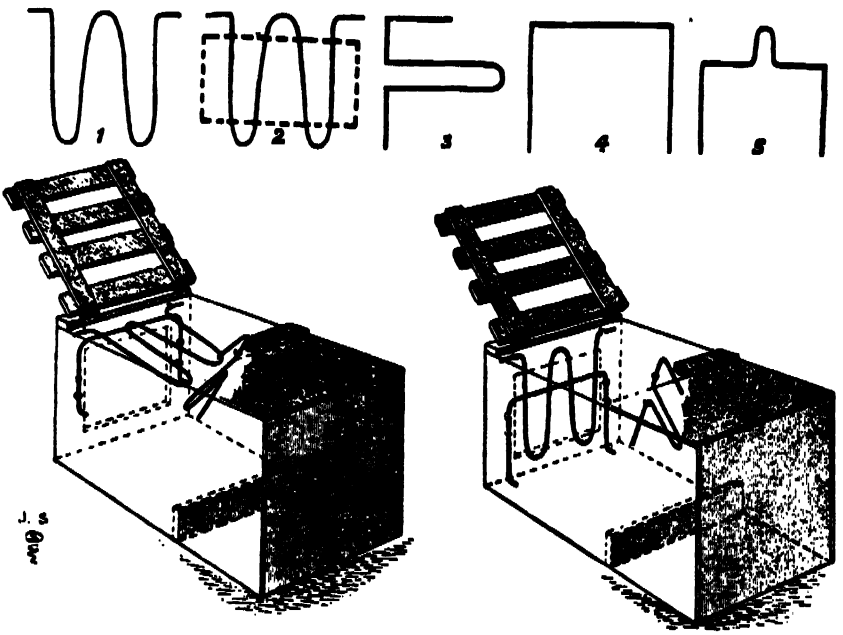


Buff Orpington Hen.

(*Bred and Exhibited by Mr. William H. Cook, Model Poultry Farm, St. Paul's Cray, Kent.*)

Winner of 1st Southgate; 1st and Special Guildford; 1st Devon County; 1st and Special Orpington; 1st and Special Dover; 1st and Special Luton; 1st Walthamstow; 1st and Special Liverpool; 1st Harpenden; 1st Redruth, etc.

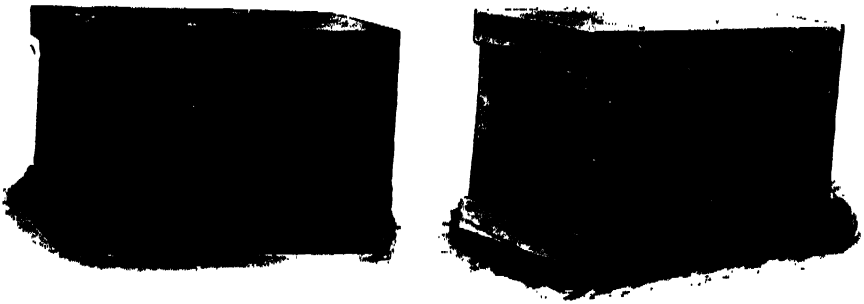
imagine that they must be in the poultry house, ready to release each hen as it starts to cackle. This is not the case, as the hens are not harmed by being confined a short time. Old and experienced users visit the pens only twice outside the feeding time. Most poultry-breeders would prefer a nest that would be entirely automatic—one that would enable them to enter the poultry house and pick out the egg of each hen without even trapping the hen. While the recording nest at the present time does not fill the requirements of some people, there is a tendency to try and improve the present idea so that all poultry-keepers can use them without having to be in the poultry house at any time, except to feed the flock. The cost of installing these appliances has been the stumbling block of many, but they are a necessity, and while they do not directly earn money they do so indirectly, by enabling the user to cut down the expenses of feeding a lot of good-for-nothing hens, which will soon pay for a complete outfit. There is no better time of the year to begin using the recording nest than during the autumn months. At this time the pullets are beginning to lay, and the old hens should be through the moult and ready to get down to business. If the breeder who has never given the trap nest a trial would only do so, he would quickly appreciate the many advantages to be derived from its use. They have been the great aid in establishing two-hundred-egg strains. There are on the market a large variety of designs in recording nests; most of the poultry-appliance manufacturers stock a pattern of their own, but the chief features are very similar. To the man who is unable to give his birds frequent attention the pattern allowing for the hen, after laying her egg, to pass through to another compartment, is the most useful, and in some designs the hen in passing from one compartment to another releases the trap and allows of another bird entering the nest and laying. This design, however, has its drawbacks, for it occasionally happens that a hen will enter the nest



A Simple and Reliable Trap Nest which can be made on the Farm.

The lower left-hand illustration shows the trap Nest with the trap set. The right-hand illustration shows the trap down and locked, so that no hen can enter or leave the nest. The upper views are of the wire parts. Fig. 1.—The trap. 2.—The trap in position behind the opening. 3.—The trigger. 4.—The lock. 5.—Another style of lock that can be used.—Illustration and text reproduced from *The Standard*, Quincy, Illinois, U.S.A.

with the view to laying, but does not accomplish her task, and, being unable to return, proceeds into the pen with those who have already laid. It is only by the release of every bird singly that a strict record of the breeding can be kept. A few of the most popular designs in recording nests are illustrated, but the reader will have to choose for himself that pattern which is most suited to his requirements.



Showing Interior Action. **Showing Nest Set.**

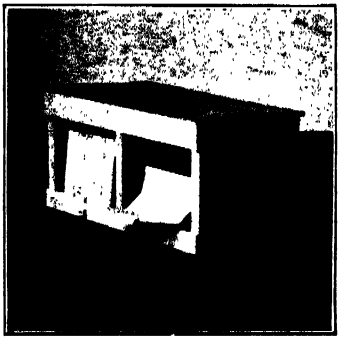
Recording Trap Nest (*Tamlin*).

—— **LAYING.** A most important, and often neglected, part of the equipment of the poultry-yard, are the nests for the laying hens. It is such an exceedingly common thing to see dirty, uncared-for nests in a fowl house; it is such an undesirable thing for the hens, and for the eggs. Eggs that are laid amid dirty hay in a dirty nest cannot themselves be clean or absolutely wholesome; they certainly will not taste any the better for it. In addition to that the hens are not encouraged to lay if to do so they have to visit an unsavoury nest. They will probably seek a nest of their own in hedgerow or wood pile, and many of the eggs will be lost. Therefore, the provision of clean nests for the layers is a most necessary matter.

The form of these nests is not so important. Cleanliness and freedom from insect pests are the two essentials. A Tate cube sugar box, turned on its side, is as good as anything; but really almost any kind of box will do if the different laying compartments have to be improvised. A colony house, however, bought from a maker should be provided with nests—the sort that can be opened outside the house. If they have to be inside, they should be ranged along the opposite side of the house to the perches—one should be provided for every three laying hens. The best nest material, in the opinion of the writer, is coarse wheat chaff—it is clean and the hens like it. Straw is also good, but hay is too hot.

—— **SITTING.** There are various good ways of making nests for sitting hens. A hen may be placed in a coop with a small wired-in run in front and allowed liberty at her own time. Or again, she may be set on eggs in an ordinary laying compartment—a Tate sugar box perhaps—with a sack across the front, or yet again, she may be placed in a special sitting box with a lid. The last-named is the plan rather favoured by the writer. The box must, however, be well-made, not draughty, but at the same time ventilated by means of holes in the lid. Small-mesh wire netting should be stretched underneath the box and tacked on—this to prevent intrusion by rats. In making the nest itself a square sod of fresh grass should be cut and placed at the bottom of the nest-box. Then some straw should be taken and shaped to the concave of a nest, the sides being well-rounded and not too steep. A handful of hay should be placed on top of this and hollowed to the shape of the straw. The great object is to ensure the eggs rolling into the hollow of the nest; in a badly-made nest there will be corners and holes into which the eggs may fall from under the hen and become cold. Dummy eggs always come in useful for placing in laying boxes to remind the hens of their duties, for giving to broodies to try them before setting on real eggs, and for putting under hens that are "resting." Many are made of china, but the most useful and less expensive kind are of pitcher—"pitcher eggs" they are called. These cost 1d. each and can be obtained at any "6½d. shop" in a country town.

NON-SITTERS (*see* "Breeds").



Payne's Recording Nest.

NORFOLK BLACKS (*see* "Turkeys").

NUMBER OF FOWLS IN FLOCK (*see* "Accommodation").

NUMBER OF FOWLS IN HOUSE (*see* "Housing").

NUMBER OF FOWLS PER ACRE (*see* "Accommodation").

NUMBER OF FOWLS TO MATE (*see* "Mating").

NUMBER OF MEALS PER DAY (*see* "Feeding").

NUTRITIVE RATIO. The proportion between the nitrogenous and carbonaceous constituents of food (*see* "Feeding").

OATMEAL (*see* "Feeding Stuffs").

OATS (*see* "Feeding Stuffs").

OATS, SUSSEX GROUND (*see* "Feeding Stuffs").

OLD HENS (*see* "Marketing—Live Poultry").

ORGANIZATION. There is nothing of more vital importance in connection with the present-day needs of the poultry industry than organization. The conditions for poultry-keeping may be exceptionally favourable; the most up-to-date appliances may be employed; the finest stock birds in the country may be maintained; eggs may be plentiful, even during the winter months; chickens may make their appearance at a most seasonable time of the year; and the farmer may be so well versed in all the intricacies of poultry-keeping that he is able to avoid many pitfalls into which the less wary may stumble; he may know everything from a cure for "pip" to the cause of "dead-in-shell," yet all this knowledge will be of small avail, and an adequate return impossible, unless he has some ready means of reaching the consumer. It is largely owing to this lethargy and indifference to these all-important matters that he is so often far behind his foreign competitors. The British farmer has a rooted objection to any sort of organization which compels him to combine with his fellows, but just what gives rise to this objection is difficult to explain. Jealousy may be one reason, and dislike to his neighbour knowing the extent of his operations is doubtless another factor militating against combination among local producers. It is difficult to say just exactly why organization or co-operation—for the two terms are pretty much the same—has never become at all popular in this country, but such, however, is the fact. On the Continent great and rapid strides have been made during the past few years—particularly in Denmark and Belgium—and the amount of good work that has been done is incalculable. For many years past organization has been preached in this country, in season and out of season, and the advantages of such a plan have been urged continuously. Many farmers have seen the benefits to be reaped, and have profited thereby, but the number is comparatively small. The co-operative societies that have been formed for agriculturalists generally, as distinct from those who merely specialize in poultry, have nearly all devoted considerably more attention to the purchasing of appliances, foods, seeds, etc., than to the disposal of the produce, although, if anything, the latter is of more importance to the producer. While a good deal has been accomplished, we have, in reality, merely touched upon the fringe of a vast and almost stupendous task. The advantages of organization have been so often stated that it is unnecessary to enumerate them here; but it should be pointed out in what respects it is especially applicable to the poultry-keeper, and how by its more general adoption the industry as a whole would be benefited.

There are some very excellent societies that have been formed, not for any financial benefits to themselves, but purely and simply in order to assist the small farmer in the buying of his food and in the disposal of his produce. Excellent though these societies are, they will never succeed in their admirable and praiseworthy endeavours unless they are well supported by poultry-keepers generally, which has certainly not been the case in the past. Such a society as the National Poultry Organization Society (which is dealt with in another part of this volume) should be supported by all poultry-keepers, for it is entirely devoted to their interests, securing for the produce a speedy sale at an enhanced price. The objects for the promotion of which the society is established are: (a) The organization and development of the poultry industry as a most important branch of British agriculture; (b) the improvement of the quality and the increase of the quantity of eggs, poultry, etc., produced in the United Kingdom; (c) the maintenance of regularity and uniformity of supply; (d) the provision of facilities for rapid transit; and (e) the bringing of the producers and retailers into closer touch, in order that the best available market may be obtained at a minimum cost.

An organized system of dealing with the produce is the key-note of success, and until the existing prejudice can be broken through we are afraid that all other efforts to secure a recognised place on the English markets for English eggs will be in vain. The importance of organized co-operative methods has been fully realized in France and in Denmark, not to mention many other places. In the latest report from Denmark we learn that there are no fewer than 500 village societies, with a membership of 40,000. This country has developed the egg trade enormously—in fact, it has been practically built up to its present gigantic dimensions during the last twenty-five years. The important bearing that organization has had upon the success of poultry keeping in Denmark has lately been very strongly emphasised by Mr. Edward Brown, whose report on the "Poultry Industry in Denmark" has awakened so much interest. It is no exaggeration to say that organization in the marketing of Danish produce accounts for much of the remarkable advance that that country has made. As Mr. Brown points out in his report mentioned above there were many difficulties that had to be faced. Among these were distance from the most profitable markets, the fact that the eggs had to be sent oversea, and that to secure the best price, more especially to meet an improvement in method then beginning, it was necessary to adopt some system whereby produce

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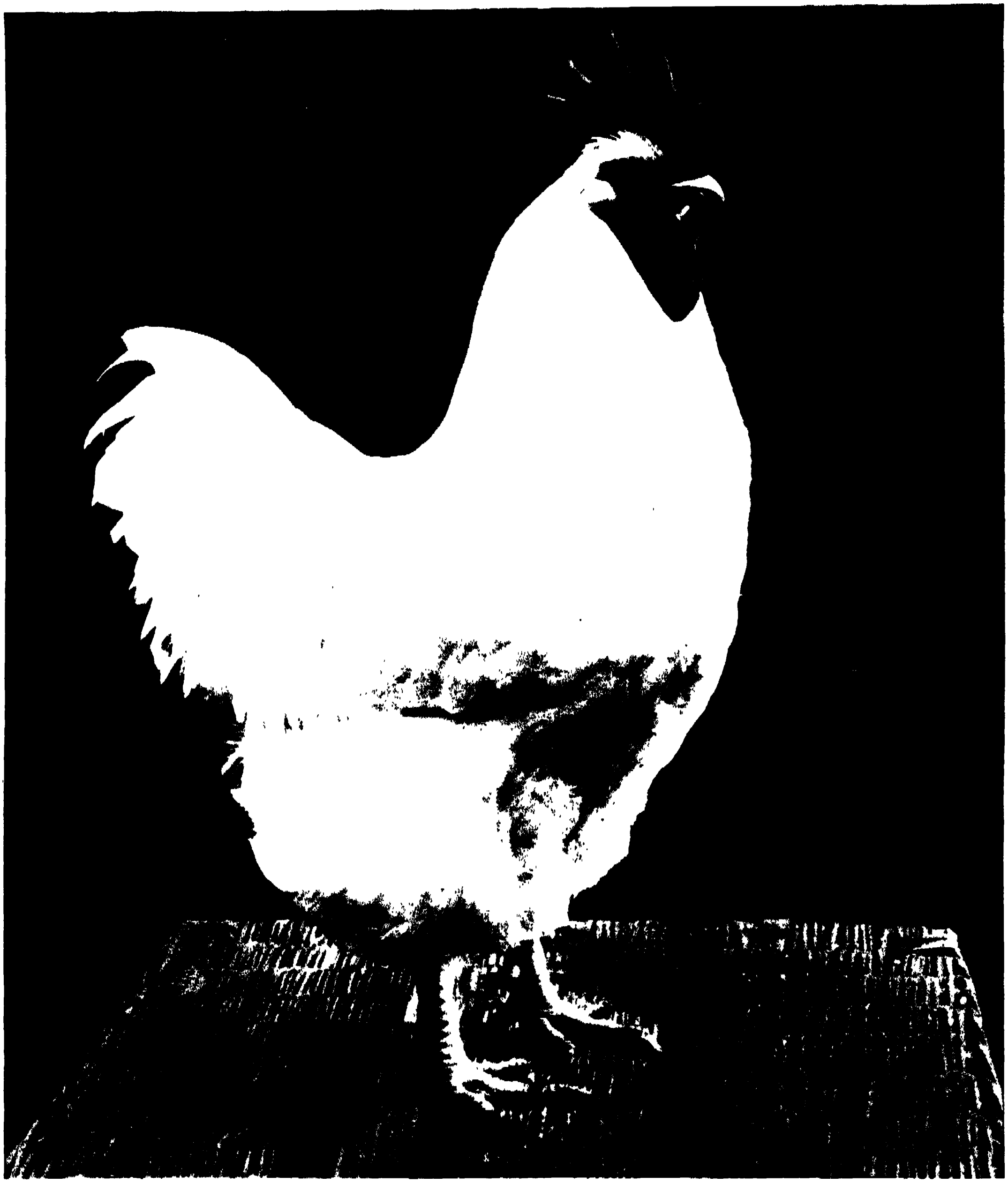

White Orpington Cock.

(*The property of Mr. Art. C. Gilbert, Swanley Poultry Farm, Wilmington, Kent, England.*)

Winner of 1st Bexley Heath; 1st and Special Canterbury; 1st and Silver Medal Paris International; 1st Eynsford; and sire of 5 1st Paris winners; 1st and Special Orpington; 1st and Special Tring; 1st Woolwich; 1st Madison Square, New York, U.S.A., 1909, etc.

could reach the consumers in the best possible condition. What has been done in connection with the butter trade afforded an excellent object-lesson, namely, by the adoption of rapid collection, by careful testing, grading and packing, and by frequent despatch. Combination among the producers themselves promised to secure the object in view in the most efficacious manner, and at the same time obtain for them the full fruits of their work. Up to that point sale had been through the channels with which we are familiar in other countries : first, the village shopkeeper, who held them until he had a sufficient quantity to send to the egg merchant ; the latter formed the second link in the chain, the third of which was the shipper. All of this meant increase of cost and of profits, and delay, with consequent loss of quality, the expenses and reduction of value being borne by the producer, who received little for his eggs. It was not until 1894 that this question was taken up in a practical manner. In that year the Agricultural Society of Vejle, Jutland, brought forward a proposal through which " The Danish Farmer's Co-operative Egg Export Association " was formed, and to this may be attributed the enormous development of the Danish egg trade. Also to its influence is attributable, in large measure, the great developments of the industry and the remarkable advance in the quality of produce, by reason of the better methods adopted. The association named above has its head-quarters in Copenhagen, but packing stations are found all over the country, each of which serves a large district, and is the centre for a number of local poultry societies. This central organization has connected with it about 500 local societies, and the total membership is upwards of 40,000. In addition, there are 290 associated with the butter factories, and when to these are added bacon factories, which work, as a rule, more directly with the producers it will be seen that there are more than 800 societies formed of producers for the purpose of combined or co-operative marketing, the total membership of which is upwards of 70,000, working conjointly and sympathetically together in the interests of each and all. Mr. W. A. Kock, in his paper read at the Second National Poultry Conference, at Reading, stated that the largest number of members of these local societies " are found in Ribe county, where 49·7 per cent. of the fowls are kept by such members, and the smallest in Rinkobing county, where the percentage is only 10. The greatest number of hens is found in Odense county. The smallest sale of eggs is in Viborg county, and the largest in Presto county." In the case of the association the price to be paid to members is fixed at head-quarters every week, whence it is sent out to the local societies. That would be an impossibility in England, as the value of eggs varies so enormously in accordance with local demand, and could only be carried out in such a country as Denmark, where the conditions as to local demand are very equal, and the produce has to be exported.

It must not be imagined, however, that nothing has been done in this country to organize the marketing of poultry produce. We have already referred to the work of the National Poultry Organization Society, and in the latest report just to hand it is stated that during the year 1908-9 the following number of eggs were collected and disposed of :—

Depot.	No. of eggs sold.		Value of sales.		
Bradley and Horningsham	150,348	..	£679	4	3
Beaminster, Dorset ..	157,965	..	746	17	10
Blackdown, Somerset	163,860	..	590	12	0
Burwarton, Salop ..	106,328	..	551	18	1½
Eardisland, Hereford	233,697	..	1,302	13	6
Fairford, Glos.	185,254	..	860	6	4
Hadfield, Herts.	60,787	..	348	5	10
Melksham, Wilts.....	181,753	..	794	3	0
South Wilts	264,696	..	1,239	0	0
Stoke Ferry, Norfolk .	231,239	..	1,077	0	0
Street, Somerset . .	533,044	..	*3,643	16	7½
Wickham Market Suffolk	452,345	..	1,817	17	5

* Includes sale of chickens, foods and boxes.

A further and most important benefit to producers lies in the fact that in districts served by a collecting branch eggs have considerably increased in value ; and the wonder is that more villages do not avail themselves of the many privileges to be derived by affiliation with a society whose main object is to gain recognition for the home product. Were some organized system of collection and marketing more generally adopted no country could possibly get ahead of us, by reason of our nearness to market, as an egg is valued according to its age ; but until these ideal methods are practised we are afraid that no appreciable decrease will be found in the huge imports of eggs from abroad. There still remains a great deal to be done, however, in this country to improve the methods of marketing, and this can only be accomplished by the advance of organization. Without proper organization full success can never be achieved ; with organization we may hope to make rapid and striking developments.

Not only in the marketing of the produce is organization or co-operation necessary. It can assist the industry in many other ways. In the purchase of incubators, brooders, houses, or, in fact, any appliances whatever, in the buying of foodstuffs, or in the buying of stock birds or eggs, a great saving can be effected by buying co-operatively. If one house can be bought for, say £5, a dozen could probably be secured at a great reduction, at 15 or even 20 per cent. discount. The same thing applies to stock birds, foods—to everything, in fact, that the poultry keeper can possibly want. Not only can an actual saving be effected on the price of the goods themselves, but a reduction can be secured so far as the carriage is concerned. Again we can learn a very useful lesson in this respect from the up-to-date and intelligent Dane, who knows that the first thing necessary in order to succeed in agriculture, or in any of the minor branches, is co-operation ; he both buys and sells, produces and distributes, co-operatively. It is not, however, only in the buying or the selling of his produce that co-operation can so materially help the poultry-keeper ; in the actual working of the holding it may play an important part. In one direction particularly are co-operative methods of value, namely, in the hatching of eggs, and already one or two places have been started in this country. In France and Denmark a similar plan has been followed for some years, with excellent results. The plan upon which such places are worked is simple in the extreme. A convenient and central place is selected, where a suitable shed is erected, containing several incubators. The neighbouring farmers bring in their eggs to be hatched, payment being made at the rate of one chicken for every three hatched. A place of this description should prove a great blessing to the neighbourhood, as there are many poultry-keepers who could extend their operations very considerably if they were able to adopt artificial methods, but who have not, perhaps, the necessary time to devote to a machine or the wherewithal to purchase one. To such, an incubating station would be a tremendous boon, as they could have their chickens hatched for them without incurring any outlay of capital or time.

ORIGIN. The several questions affecting the origin of poultry in general, and of the common domestic fowl in particular, have provided subjects for much controversy—and are in many particulars still open for discussion. The present object is not to dogmatize, but to present for the reader's consideration some of the arguments and statements set forth by those whose opinions carry weight, and are at least deserving of careful attention.

By way of introduction it may be as well to note that experience leads us to recognise not only great variety, but also a considerable number of instances of agreement in the midst of variety, and in the operation of forming a general notion, something in the nature of classification is attempted. The term genus is employed to designate a group of species, closely connected by common characters, although "species" is itself to some extent a generalization, each species having under it an innumerable number of individuals differing considerably from one another. These terms, therefore, introduce us to the existence of successive generalizations. Genera are arranged in larger groups termed orders, variously sub-divided into sub-orders, families, tribes, etc.; and are themselves grouped into classes, divisions, and kingdoms of Nature. Species consequently indicate groups inferior to genera, but superior to varieties. Varieties are regarded as less permanent than species, and those who adopt the view that species are quite distinct in their origin, regard varieties as modifications due to special causes; but according to the Darwinian view, varieties are considered rather as species in process of formation. There is, however, a general difficulty in deciding what are species and what are varieties, and the whole subject is further involved by the various uses of similar terms. As a matter of fact, the term 'species' is most difficult to define, without including in the definition some more or less disputed theory. Among the better known, and most widely adopted, definitions may be mentioned that of Buffon: "A species is a constant succession of individuals similar to and capable of reproducing each other." That of De Candolle is as follows: "We unite under the designation of species all those individuals that mutually bear to each other so close a resemblance as to allow of our supposing that they may have proceeded originally from a single being or a single pair." According to Cuvier, the term implies "a succession of individuals which reproduces and perpetuates itself."

In contradistinction to the theory of separate creation and the immutability of species, it has been maintained that species are subject to modification, and that existing forms have descended by true generation from forms previously existing. These latter views had been in some measure propounded by a succession of writers, but failed to attract general attention until the publication, in 1859, of Darwin's work "On the Origin of Species by means of Natural Selection." Although not fully accepting the views set forth by Darwin, Professor Huxley supported: "the hypothesis which supposes the species living at any time to be the result of the gradual modification of pre-existing species"—and the same writer, relative to the supposed formation of each species by a distinct act of creative power, regards this assumption as being: "as unsupported by tradition or revelation as it is opposed to the general analogy of nature."

Natural selection in the struggle for life is the keynote of Darwin's theory, and it is that principle that chiefly serves to distinguish his views from those of his predecessors along the same lines of thought. He maintains the variability of species, the continued progress of variation as a result of external conditions. He emphasizes the difficulty of distinguishing between species and varieties to which reference has been made; and insists upon the changes caused by conditions of domestication. Arguing from man's artificial selection in the making of new breeds and varieties, a similar natural selection is supposed in the struggle for life—and subject to external conditions. It is shown how the survival of the strong, in the keen competition of Nature, may be quite sufficient to account for the perpetuation of slight variations; as well as explaining differences observed in different countries. "Can it be thought improbable, seeing that variations useful to man have undoubtedly occurred, that other variations useful in some way to each being in the great and complex battle of life, should sometimes occur in the course of thousands of generations ? " and again "Variations neither useful nor injurious *would not be affected by natural selection, and would be left* a *fluctuating* element." *It is also particularly* noteworthy that according to the teaching of Darwin, not only are new variations continually taking place (in many instances to become quickly extinct), but that others are perpetuated to the extinction of the original forms ; and in some cases give rise to other forms, sufficiently divergent to obliterate the traces of the common origin. It is, moreover, a matter of experience that it is the common, widely diffused, and widely ranging species, which vary most.

—— **THE COMMON DOMESTIC FOWL.** The common domestic fowl exists in infinite variety, and the statistics of exhibition poultry show that there are in the British Isles some sixty 'breeds' and over 150 'varieties'(*sic*) exclusive of bantams. For the simplification of the matter breeds have by some been divided into two classes, which have been described as natural breeds and artificial breeds. 'Breed' has been defined colloquially in reference to domestic animals, as a variety, or often merely a race distinguished by the possession of particular qualities, but not differing from the ordinary type of the species so as to constitute what naturalists usually designate a variety. The value often depends in a great measure upon characters that can scarcely be defined by scientific description, which have of themselves little permanence, and the perpetuation of which depends upon the skill of the breeder—from which they frequently originate. The natural influences operative in the directions indicated include chiefly varying conditions of climate, soil, food and the general surroundings, to which fowls have been subjected in the different countries in which they have been bred under conditions of domestication ; and to these factors must be added the other modifying influences of the many circumstances of domestication. Fowls have been found to very readily adapt themselves to widely differing conditions, which in conjunction with the fact that, domesticated races exhibit an inevitable tendency to differ from any now known in a wild state, is doubtless accountable for many variations. Moreover, apart from any modern exhibitional intent, the breeders of bygone generations must undoubtedly have exercised some control by selection ; such selection may have been more or less unconscious, but there would have been an instinctive tendency to retain the best—according to current ideas and objects. The manufacture of what have been described as 'artificial breeds' has, of course, been entirely intentional, being the production of deliberate purpose ; so that the distinction between natural and artificial breeds, consists chiefly in the fact that, some have become evolved by a gradual process, whereas the production of the others has been largely arbitrary. It is only necessary to note the extreme length of leg, the abnormal comb development, or the weight of feathers, in some modern instances, to realize the possibilities of the fowl as regards variations in the hands of skilful breeders. The Polish fowl provides an example of structural alteration, as the evident—although doubtless unexpected—result of a long-continued selection for abnormity of crest. The influence of selection, whether natural or artificial, is, therefore, so varied and remarkable that it is scarcely a matter for surprise that the origin of the domestic fowl has been the subject of dispute.

J. W. Ogilvie Grant, in his monograph of the Gallinæ (published in Allen's Naturalists' Library), wherein he enumerates every species of game bird known up to the present time, endorses the opinion that all the domestic breeds of poultry are said to have been originally derived from the Red Jungle Fowl ; which he emphasizes by the statement

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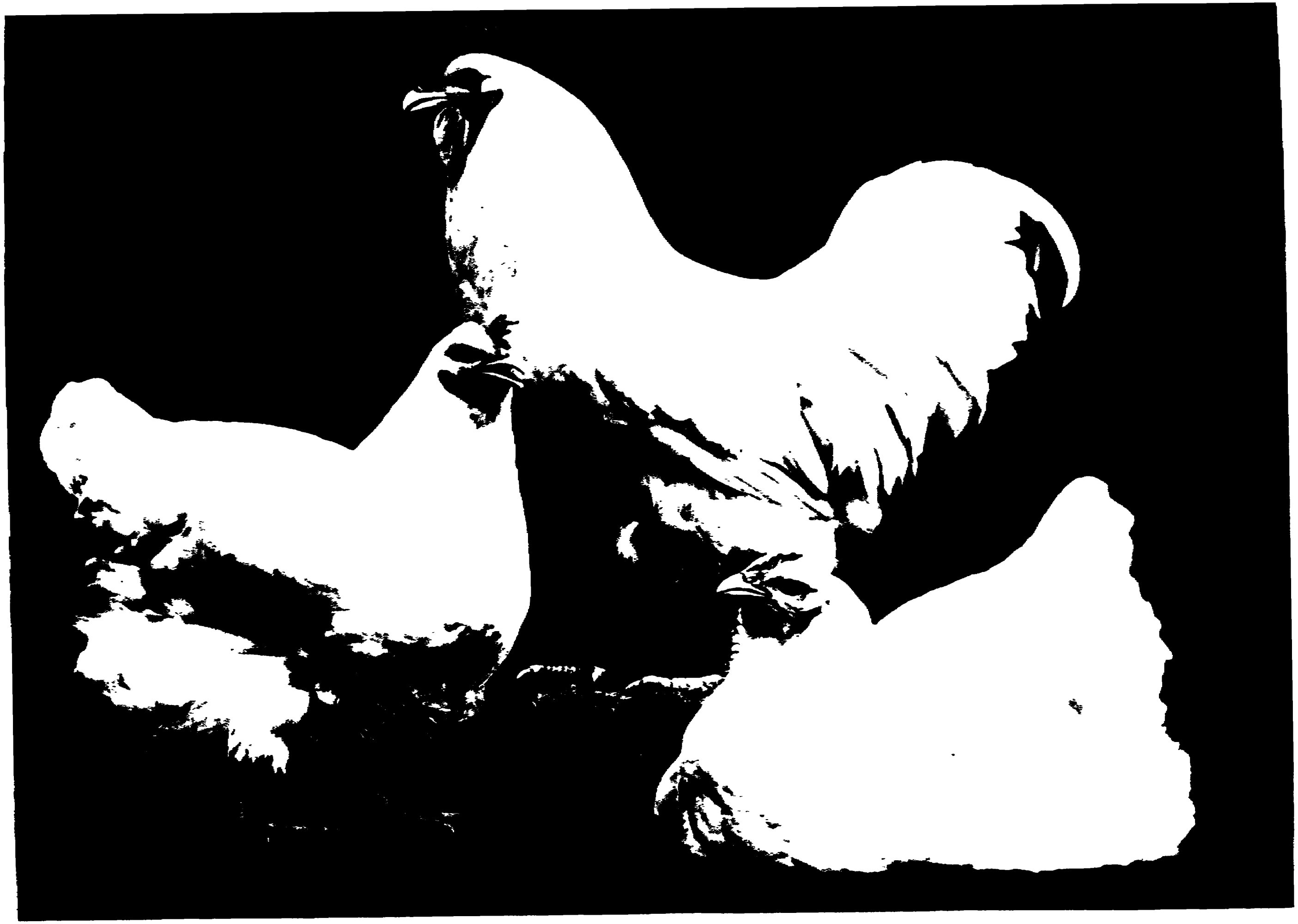


White Orpingtons.

(Bred and Exhibited by Mr. Art. C. Gilbert, Swanley Poultry Farm, Wilmington, Kent, England.)

Winner of Three 1st, Diploma and Silver Medal, Paris; 1st and Silver Medal, best Hen in Show "The Royal," Gloucester; 1st and Special, Wirrall and Birkenhead; 1st, Theydon Bois; 1st and Special, Canterbury, 1st, Redhill; 1st and Poultry Club Cup, Deal; 1st and Special, Tring; two 1st and Cup, Best Hen in Show, Eynsford: 1st and Special, 2nd Best in Show, Orpington (one of the same Breeder's Black

that when domestic fowls are allowed to escape and run wild in surroundings similar to their original habital, they soon revert to the wild type and become indistinguishable from typical examples of the Indian Red Jungle Fowl. The habits of this fowl are similar to those of pheasants in our own woods, and its range includes the jungles of the North-East and some parts of Central India, extending south through the Malay Peninsula to Sumatra, and East to Siam and Cochin China. It is found wild in Java, Lombock Celebes, Salawan, the Philippines, Hainan, and other islands ; but it seems more than probable that it has been at some time imported to all these islands, and that they do not form part of its natural range.

Mr. A. O. Hume in his "Game birds of India" says : "The Red Jungle Fowl is, as the latter portion of its name imports, a true denizen of the Jungle. It is entirely wanting in the dry, level alluvial plains and semi-deserts of India (upper). Vertically this species ranges from sea-level to 5,000 feet elevation, but is generally found lower in the cold season, and is rarely met with above 3,000 feet except during the hot season." Jerdon says : "Their crow . . . . is quite like that of a Bantam cock, but shorter and never prolonged as in domestic cocks." Colonel Tickell writes : "The cocks may be heard of a morning and evening crowing all round . . . .The hen too, announces the important fact of having laid an egg with the same vociferation as in the domestic state . . . It is curious to hear familiar sounds of our farmyards issuing from the depths of the wild forest."

In his "Variation of Animals and Plants under Domestication," Darwin favours the supposition that the Gallus Bankiva (which is the so-called Red Jungle Fowl) is the sole progenitor of the domestic fowl. The main arguments in support of this view, as advanced by Darwin and others, are that there is a very close resemblance in colour, structure and voice between the Gallus Bankiva and the Game fowl ; that when crossed they are fertile ; and that the wild species can be tamed. Moreover, this species has a much wider range than the other known species, it varies in its habitat, and shows considerable variation in its wild state. Nevertheless it must be noted that Darwin qualified his statement of opinion as follows: "We have not such good evidence with fowls, as with pigeons, of all the breeds having descended from a single primitive stock."

The general characteristics of the *type* are as follows : Tail composed of fourteen or sixteen feathers, laterally compressed and with a downward curve ; the middle pair in the male being about twice as long as the second pair, and four times as long as the outer pair. The first primary flights are much shorter than the tenth, the fifth being the longest. The comb of the male is high, extending from the base of the bill to behind the eyes, the margin being serrated or entire ; the sides of the face and the throat are naked, with either two pairs of wattles situated below the ears, and on each side of the throat, or a single wattle down the middle (the Javan Jungle Fowl—Gallus Varius—has sixteen tail feathers and a single wattle, but is otherwise a typical Gallus, and is not considered generically distinct). The tarsi are armed with long, sharp, and curved spurs, which are undeveloped in the female. The female comb is rudimentary, the wattles are absent, and the middle tail feathers are not elongated.

The Red Jungle fowl, or Gallus Bankiva, is possessed of the following characteristics : Black breast, slightly glossed with green, and long hackles (mantle and rump) of orange-red, or yellowish-orange, but with considerable individual variation the foregoing applying to the adult male. In the adult female, the top of the head is a rusty-red colour, shading into orange on neck, and light yellow on mantle, with a black stripe down the centre of each feather. The remainder of the upper colour is a reddish-brown, mottled with black ; the secondaries mottled with pale reddish-brown at the edge of outer webs ; front of neck chestnut ; and the remainder of the under parts, pale light-red, but browner on the belly and flanks.

The other known species are the Gallus Stanleyii, the Gallus Sonneratii, and the Gallus Furcatus (or varius). Of the first, arguing mainly from the sterility of hybrids, Darwin concluded that "this species may in all probability be rejected as one of the primitive stocks of the domestic fowl." Relative to the second, the same authority asserts that "we may reject this as the parent of any domestic breed ;" and with regard to the third, it is said to "differ in so many characters that no one supposes it to have been the parent of any one of our breeds."

The argument advanced by the late Mr. Lewis Wright is as follows : "We are disposed to think the original type can only be found still further back ; that it diverged into various sub-types, including the four wild breeds still known ; and developed through the Gallus Bankiva into the Games, while other breeds were reached through collateral branches, now either extinct, or possibly still further modified into the present other three known races."

Before concluding this section reference must be made to a report of hybridization experiments, with the Ceylon Jungle fowl (the Gallus Stanleyii referred to above), conducted by the Ceylon Poultry Club, carried out in 1906-1907 ; wherein Mr. Llewellyn Thomas, F.R.C.S., draws attention to the fact that as a result of mating a hybrid cock with a hybrid hen, two chickens were actually hatched—living for twelve and eighteen days respectively After referring to the fewness and difficulties of these experiments, the same gentleman justly admits that : "It would appear that even if full proof of the complete fertility of the hybrids were forthcoming, it would not necessarily prove that the Gallus Stanleyii and the domestic fowl are of one and the same species."

Relative to Jungle fowl in general, Mr. A. O. Hume says : "To a certain extent the Jungle fowl is omnivorous, and *will* eat not only grass and young shoots and flower buds, and seeds and grain all kinds, but worms and grasshoppers, and beetles and small land shells ; but they are preferentially graminivorous." The Jungle fowl is polygamous.

—— **THE TURKEY.** The turkey is the largest of the gallinaceous birds, and next to the common domestic fowl, is the most useful in domestication of that important order. In common with other domesticated fowls, its origin has been disputed ; but the most commonly accepted opinion is that it has descended from the wild species of North America.

The general characteristics of the turkey, as a genus of gallinaceous birds, include a head bare of feathers, a wattled neck and a conical fleshy caruncle surmounting the bill. A tuft of hair springs from and hangs over the breast. The bill is short, strong and curved ; the tail broad, rounded and capable of erection and spreading. The natural habit is to roost in trees, and the range of food includes grains, seeds, grasses, fruits and insects. The nest is made on the ground, and although the sexes mingle in winter when the birds congregate in large flocks, for a considerable portion of the year the males separate from the females.

Inasmuch as the turkey is found to degenerate in India it was concluded by Darwin that it cannot originally have been of tropical origin, which is a strong argument in favour of descent from the North American species. One of the arguments advanced against this origin is based upon the fact that in the common wild turkey of North America there is no white in the plumage, against which may be set the testimony of Dr. Bachmam in his "Examination of the characteristics of Genera and Species," wherein he states that: "he has seen turkeys raised from the eggs of the wild species lose their metallic tints, and become spotted with white in the third generation." There is, as is pointed out in the section dealing with "Turkeys—domestic varieties," considerable variation in the colour of the plumage of these birds in domestication, the darkest coloured of which very nearly resemble the wild species. The plumage of the wild bird is richer than that of the domesticated, there is more blue than red in the colouring of head and neck, and the legs are of a reddish tint. The principal plumage colours are copper-bronze, purple, green and black; the feathers on the body having a black edging—but no white as in the domestic bronze variety.

The range of the common wild turkey, which included the forests of the Atlantic States and a wide area to the North-West (upon the Mississippi and Missouri), as far as Lower Canada, has become considerably restricted in face of a rapidly advancing civilization. The range extends south to the Isthmus of Darien, is bounded on the west by the Rocky Mountains, but includes the wooded West Indian Islands on the east. The birds spread themselves in summer over the higher grounds, but congregate in the rich low valleys during winter.

The Mexican variety appears to be only distinguishable on account of a slight variation of colour, white existing in the tail feathers and tail coverts; it will breed equally well with the wild or the domestic races.

The only other known species of Turkey is the Ocellated, a native of the warmest parts of North America; but now found only on the east of Central America—British Honduras, Guatemala, and Yucatan. It is much smaller than the North American species, has a smaller tail and the neck is less amply wattled although the head carries fleshy tubercles. The plumage is described as rivalling that of the peacock in its metallic brilliancy, blue, green, bronze and red, mingling with golden hues, and the tail being eyed or 'ocellated'—the peacock marking—hence the specific name. It is thought to have been domesticated in the distant past, but modern and quite recent attempts in that direction have resulted in failure—probably on account of incorrect feeding. In 1907-8, the Zoological Society attempted to procure live specimens, but they died of starvation before they reached the gardens; although they became tame in captivity.

—— **THE GUINEA FOWL.** The Guinea Fowl (or Pintado) is a genus of gallinaceous birds of relatively small economic importance, the species of which appear to be all natives of Africa and Madagascar. The best known is the common Guinea fowl, characterised by a naked head, a hard casque, and slaty plumage speckled with round white spots. This species is held to be the parent stock of the birds usually found in domestication; it is common in Guinea, and thence southward to the Cape of Good Hope, and eastward to the island of Madagascar. It has become naturalized in Jamaica, and is kept in a state of semi-domestication throughout Europe and America, but is more adapted to warm than to cold climates. In its wild state it is gregarious, although less polygamous than most gallinaceous birds. In general the domesticated bird closely resembles this species as regards general characteristics, and colours and markings of plumage, although variation is, of course, more common than among the wild birds. The white variety found in domestication has been produced from comparatively rare sports of the common wild species.

—— **THE GOOSE.** Although all the species of this genus appear to be more or less capable of domestication, and several have been to some extent domesticated, the Common Domestic Goose is generally regarded as having derived its origin from the Gray-Lag, or Common Wild Goose.

This species occurs in central and southern Europe, in many parts of Asia, and northern Africa, but is unknown in America. It is a bird of temperate climates, and is found in some countries at all seasons, but in severe weather migrates southward from its more northern haunts. In migrating it flies at a great height in large flocks, in a double or V shaped line, headed by an old gander. It was abundant in the English fens before their drainage, but is now comparatively rare in the British Isles, and is chiefly known as a winter visitant. It nests on moorlands or amid the rushes and tussocks in marshes, and has been found during the early summer in the North of Scotland and in Finland—and may be found in large quantities in Spitzbergen. It frequents bays, estuaries, and inland waters, but frequently visits the open country, as well as meadows and cultivated fields, often at night.

Although the goose was very probably one of the first birds to be subjected to domestication, there is no very wide difference as regards the varieties.

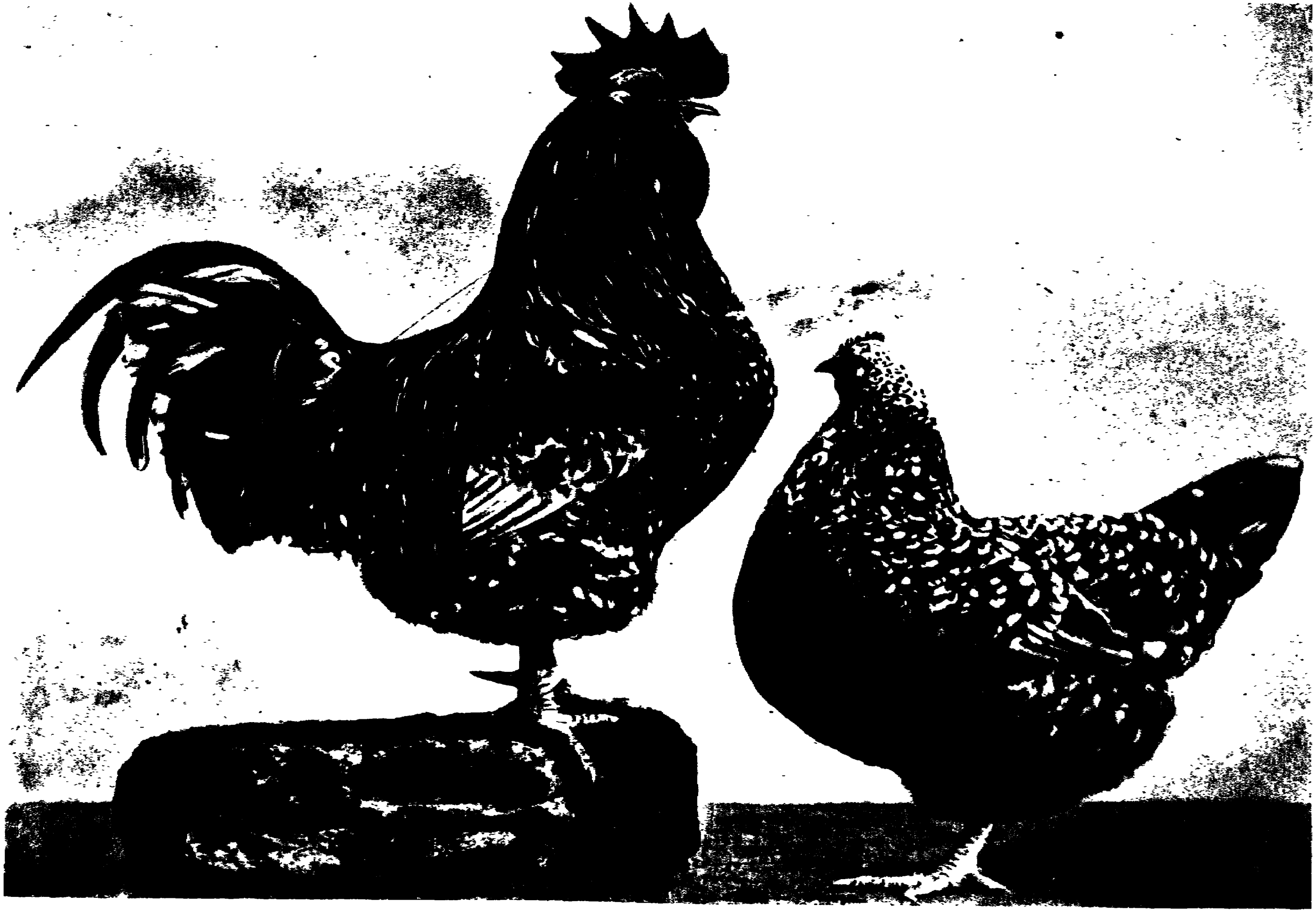
The Gray-Lag is the largest of the native British species, measuring about three feet from the tip of the bill to the end of the short tail, the extent of wing being about five feet, and the weight approximating to ten pounds. Except for the smaller size of the female, the general appearance of both sexes is very similar, and the colour of the plumage is as follows: Head, neck and back, ash-brown, but lighter on the front parts; under colour white, with some irregularly distributed black spots. Tail white and brown; beak and legs, flesh coloured, and eyes, hazel.

—— **THE DUCK.** Of ducks generally it may be said that they are characterised by a greater breadth of bill than swans or geese; that their food is mainly animal, that of the others being chiefly vegetable; that their legs are shorter and placed further back, and that their necks are shorter. Moreover in addition to the peculiar anatomical character of their trachea (consisting of a large dilation on each side of the windpipe), there is a considerable variation of plumage as between the male and the female. Ducks as a general and large group are subdivided into two sections, one with a webbed hind-toe, and the other in which the hind-toe is without a marginal membrane; the former embraces the oceanic section, and to a genus or subgenus of the latter belongs the Wild Duck or Mallard, which is the parent stock of the Common Domestic Duck. It should, perhaps, be noted in passing that although the terms mallard and wild duck are frequently used interchangeably, the former properly belongs to the drake or male alone—and the latter to his mate. From the Mallard have descended all the Common Domestic varieties, the great differences exhibited in some of them being chiefly due to the influences operative under prolonged domestication, the various evidences of this common origin culminating in the fairly conclusive fact that not only will the wild duck breed freely with the domestic, but that the progeny are fully fertile.

The distribution of this species is very wide, wider perhaps than that of any other bird, but at any rate including the whole of the Continent of Europe, North America, the West Indies, a great part of Northern Africa and Western Asia. It regularly turns southwards from its more northern haunts in the cold season, its favourite habitat being in temperate latitudes. As in the case of the Gray-Lag Goose, the Wild Duck is much less abundantly found in Britain since drainage has become more general in marshy districts. It invades our shores in large flocks in the autumn, large numbers being found in the fens; and the species still breeds in Britain to some extent, in the neighbourhood of lakes and streams, and

(*The Encyclopædia of Poultry.*)

PLATE NO. 74



Diamond Jubilee Orpingtons.

(*The property of Mr. Art. C. Gilbert, Swanley Poultry Farm, Wilmington, Kent, England.*)

Winners of 1st and Challenge Cup Palace, 1st Club Show Cambridge, 1st Bath and West, etc. Sires of four 1st winners Royal Lancashire, three 1st winners at the Dairy Show, two 1st winners Tunbridge Wells, and 1st winners at Hayward's Heath, Norwich and Hanwell Club, Shows.

also in the higher moorlands—sometimes at a considerable distance from any water. In the wild state these birds always pair, but under domestication become polygamous; and it has been found that birds bred and reared in captivity direct from the wild stock, retain this habit of pairing—as well as their wild plumage—until at least the third or fourth generation. Subsequently their plumage undergoes variation, their size and prolificacy increase, and they develop polygamous habits. March is the usual month for pairing in a wild state, and from nine to twelve eggs are produced in a clutch.

The plumage of the Mallard is very brilliant. The colour of the head and neck is a bright metallic green, encircled on the lower part of the neck with a white band; the back and upper portion of the breast is rich chestnut, the rest of the breast and the under parts being grey-white with a dark pencilling. The four central feathers of the tail are curly upwards in stiff curls. The wing bar is blue, violet and green; the feet, orange, and the bill, a greenish yellow. The plumage of the duck is much more sober, being grey and brown in varying shades, with a white throat, but without any curl in the tail feathers.

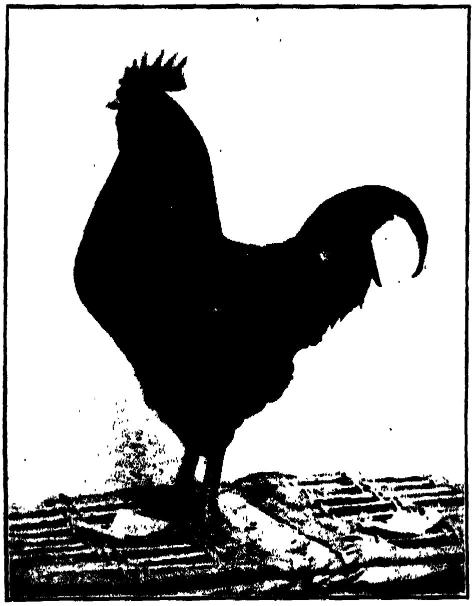
In common with some other ducks, the plumage of the Mallard undergoes a remarkable summer change. Commencing in May, the sexual plumage is gradually shed, until in about eight weeks the bird resembles the female in colouring. During August a second moult begins and the change continues, until in October the distinctive Mallard plumage is entirely renewed.

ORPINGTON. It may safely be said that, among the many breeds of fowls in existence at the present time, the Orpington, in its several varieties, stands out as one of the most, if not actually the most, popular. The causes of this popularity are not far to seek. Chief among them is what may be called, for want of a better term, the many-sidedness of the breed; no other fowls can show such a perfect combination of excellent exhibition, laying and table qualities as the Orpingtons.

An Orpington of any variety is a handsome bird, and therefore is a favourite with exhibitors; at the same time for the production of large brown eggs all the year round, and particularly during the cold months of the year, the Orpington stands without rival, while for table purposes the white skin, large size and delicate flesh tell immensely to its advantage. Again, the hardiness of individuals of the breed, whether as chickens or as adult birds, appeals strongly both to those who breed for exhibition and to those who keep the birds for utility purposes alone.

As a result of their hardiness Orpingtons can adapt themselves to their environment with extraordinary facility, and they will do well on any soil, and in any climate, either confined in pens or kept at liberty on the colony system. Although the females, unlike those of most heavy breeds, do not become broody with undue frequency, and though broodiness can easily be checked if advisable, no better mother than an Orpington can be found. Though mentioned last in this brief list of good points the fact that double mating is not at all necessary for the production of the very best Orpington stock is by no means the least of the causes of the popularity of the breed.

The Orpingtons were first exhibited in the black single-comb variety by their originator, the late William Cook (with whom the present writer was closely associated during the production of the Black, Buff, White, Jubilee and Spangled varieties) at the Dairy Show in 1886, and immediately sprang into favour, filling as they did a long-felt want for an all-round utility and exhibition fowl. A few years later the Black Rosecomb variety was introduced, but for no very obvious reason this variety never gained any great degree of popularity in this country, though, with all the other Rosecomb Orpington varieties, it is regarded with much favour in America. In 1890 Mr. Cook brought out the Buff variety. While the sterling qualities of these birds were then, and have been ever since, freely admitted, cavillers raised a storm of protest because this variety was called an Orpington at all, asserting that it was in reality an improved Lincolnshire Buff. Old controversies are unprofitable, but it must be definitely put on record that the Buff Orpington was produced without the introduction of any Lincolnshire Buff blood whatsoever. Following the Buff Orpington, the White Orpington appeared in 1893, and although, owing to the prejudice against white birds on account of their supposed delicateness, this variety did not immediately equal its predecessors in popularity, of late years it has gained that recognition which is due to it as a worthy member of the Orpington family. Of course (and this must bear weight with fanciers who do not live in the country) it cannot be denied that the smoky atmosphere of towns spoils the appearance of the birds, but in the clear air of the country the White Orpington can, and does, show itself fully equal to the other varieties, as much in beauty of appearance as in utility qualities. Considerable hostile criticism greeted the White Orpingtons on their appearance. The main indictment was that the Whites were not Orpingtons but "Albions," a Sussex variety now extinct. The late Mr. Lewis Wright mentioned this in his new book of poultry (chap. XXXIII.), and unintentionally gives an answer to the accusation, as he says that the first pen of Albions was, in his belief, bred by Mr. Godfrey Shaw in 1897, and later on he says that the breed (Albions) "has been recently appropriated as White Orpingtons," whereas, as mentioned before, the White Orpington was introduced in 1893, or four years before the year mentioned by Mr. Wright as that in which the first pen of Albions was bred.



The Black Orpington of the 90's.
Exhibited by Mr. Hue Crawford in 1892-4.

The Diamond Jubilee Orpingtons were brought before the public in 1897, and their introduction marked a new departure in Orpington varieties as, of course, all the previous varieties had been self-coloured. The Jubilee Orpington gained considerable recognition immediately, and has retained this popularity ever since, in spite of persistent attempts to prove that the Jubilee Orpington is not and never has been anything more than a Speckled Sussex. Next to the Jubilees in order of introduction came the Spangled Orpington, a variety which breeds very true to type and possesses in full all the Orpington characteristics. The latest variety of the Orpington breed is the Cuckoo, introduced by Mr. W. H. Crook in 1907. Though this variety is so young its merits have already gained general recognition, and doubtless in the future it will equal in popularity any of the older varieties.

Before dealing at length with the points of the different varieties individually a few remarks on breeding Orpingtons generally may be not out of place.

There is at the present time a most regrettable tendency to breed more for colour than for type. As a result prizes are frequently awarded to long-legged, long-backed birds whose type bears not the faintest resemblance to that of a true Orpington. Both breeders and judges must bear in mind that type must take precedence of colour. A bird should be judged, first as an Orpington, *i.e.*, for type and size (in that order advisedly) and then afterwards as a member of its variety, *i.e.*, for its colour. The logical conclusion to be drawn from the present tendency to disregard type is that, in the future, the differences between breeds will cease to exist and that different classes will be provided simply for birds of different colours. Apart from the broad question of type there are a few faults which have to be guarded against carefully. Though not nearly so prevalent as in the past, leg feather must be regarded as a defect to which Orpingtons are liable, and it has an unpleasant way of appearing after an injudicious introduction of fresh blood. In judging, an Orpington showing any trace of leg feather should be passed remorselessly. In some strains in which Rosecomb blood has been introduced side sprigs appear on the combs of individuals with more or less frequency, and, of course, unless proper precautions are taken in mating up the breeding pens this fault appears in a rapidly increasing number of individuals. All varieties of Orpingtons are apt to show a little white in lobe, but although the fault is a serious one the tendency to it is not very pronounced, and with a little care can be eliminated from a strain. It need hardly be mentioned that a bird with twisted toes, inknees, bow legs or any other such failings is quite unfit for the breeding pen.

The following is the standard of type for all the Orpington varieties :—

In the cock the head should be small, neat, full over the eyes and carried erect. The beak strong and nicely curved. The eye full, bright and intelligent. The comb either single or rose, in the first case, of medium size, erect, evenly serrated and free from side sprigs ; in the second set straight and firmly on the head, full of fine work or spikes, free from hollow in centre, and narrowing behind to a distinct peak lying well down to head (not sticking up). The ear-lobes medium size and rather long. Wattles medium length and well rounded, and the neck nicely curved with full hackle. The breast broad, deep, and full, carried well forward with long straight breast bone. The back short, with broad shoulders. The saddle rising slightly with full hackle. The wings well formed and carried close to the body. The skin should be thin and fine in texture, and the flesh firm. The tail medium size, flowing and inclined backwards. The thighs and shanks short and strong, the feet provided with four toes well spread out. In general appearance the bird should be cobby and compact, erect and graceful, with close plumage. It should weigh between 9 lbs. and 10 lbs., when fully matured.

The hen possesses the same general characteristics. The cushion should be small, but sufficient to give the back a short and graceful curved appearance. The tail of medium size, inclined backward and upward, while the weight should be about 7 lbs. or 8 lbs. when fully matured.

Value of points in Orpingtons, cock or hen.

Defects.	Deduct up to
Defects in plumage and condition ..	10
,, head 5, comb 7, face 5, beak 3, eye 5	25
,, breast	10
,, saddle or cushion and back	5
,, tail	5

Defects.	Deduct up to
Defects in legs and feet	5
,, skin and flesh	5
Want of shape	15
Defect in carriage	10
Want of size	10
A perfect bird to count	100

—— **BLACK.** The Black, the oldest of the Orpington varieties, was produced by mating black Minorca cocks with black Langshan hens, and then mating those of the offspring that came black with black Plymouth Rocks. It must, however, be remembered that in 1880, when the production of the first Orpington was in process, the above-named breeds were still of the old-fashioned short-legged type, and of wonderful constitution. Even after the Black Orpingtons made their entry into the poultry world in 1886 there were many imperfections to be bred out, particularly white lobe and high comb, inherited from the Minorca grandfathers, feathered legs, inherited from the Langshan grandmothers, and yellow legs inherited from the Plymouth Rock parents. Except for the fact that a small amount of white in lobe appears occasionally the foregoing defects may be said to have been entirely eliminated from the variety, and Black Orpingtons have been in existence now for so long that practical perfection is frequently attained both in type and colour of individuals. With regard to type, a Black Orpington is an enormous bird, very broad across the back, with a wide and full chest and deep body, the legs (which are black with white toe nails) are very short and thick and set well apart. Viewed from the front a bird of this variety presents a very massive and solid appearance, and owing to its short, wide set legs and width and depth of chest, bears a resemblance to the typical British bulldog. In profile the most important features of type are the U backs and cobby shape. The colour is not a sooty black, but practically every feather is of a beautiful glossy beetle green, and bears an extraordinary bloom, which adds materially to the strikingly handsome appearance of the birds and is admired by all who see them. The birds look well all the year round and never lose their colour, even though exposed to the sun and rough weather, They do well either in confinement or in large runs, are extremely hardy, and, if judiciously fed, are moderate early winter layers, but they are liable to become far too fat to lay if overfed. Double mating is not necessary in breeding Black Orpingtons, as perfect specimens of both sexes are produced from one judiciously mated pen, but very great care is necessary in the selection of the birds for a breeding pen if ideal specimens are to be raised. In particular it is important to avoid purple or bronze colour in the plumage (and, of course, any trace of white), long legs, neck and back, too high or too low tail carriage, white in lobe and weak or too large comb. However good an individual may appear should it have a light brown or hazel eye it must be discarded at once, as a black or dark brown eye is a very important point. The introduction of such a glaring defect (alone enough to destroy an otherwise perfect bird's chance of a card in the show pen) into a strain is a very serious matter and greatly depreciates the value of stock. There is also a considerable danger of a too close approach to the Cochin type, and an excess of fluff and a distinct cushion are frequently to be seen in birds in the show pen. This, of course, is largely attributable to the actual introduction of Black Cochin blood into certain Black Orpington strains. It should be pointed out that Black Orpington chickens with white tips to their flights generally carry the best adult feathers.

The following is the standard for colour in Black Orpingtons, and success in

PLATE No. 75

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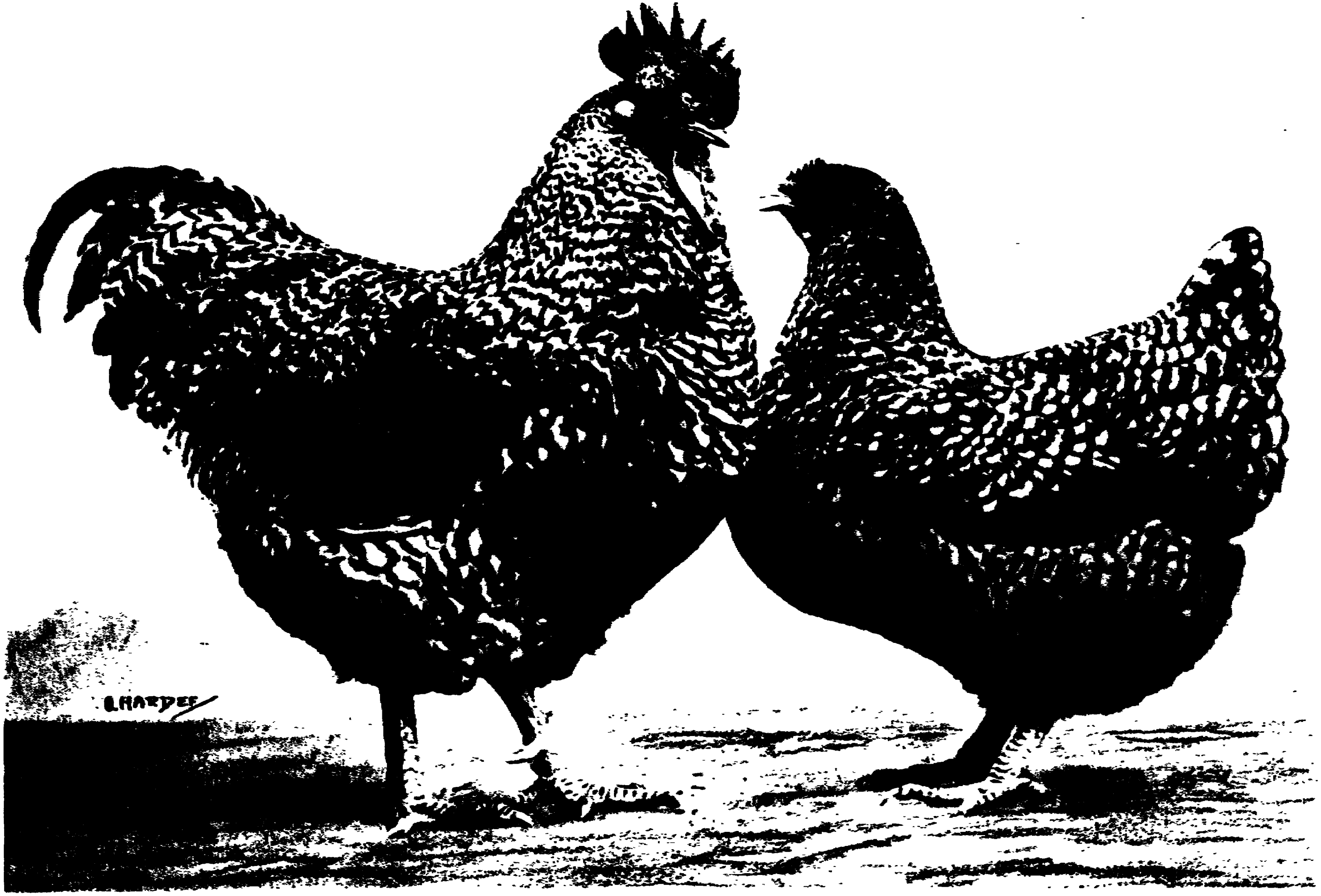


Cuckoo Orpingtons.

(The property of Mr. Art. C. Gilbert, Swanley Poultry Farm, Wilmington, Kent, England.)

Winners of two 1st Paris International, 1st Eynsford, etc., and sires of 1st and 2nd Dairy winners, two 3rd Palace winners, etc.

exhibiting this useful variety can only be attained by the production of birds conforming very closely to this standard.

Standard for colour in Black Orpingtons. In both sexes—Beak, black; eye, black, with dark brown iris; comb, face, ear-lobes and wattles, red; shanks, black; skin and flesh, white; plumage, black throughout, with a green sheen or lustre upon it, free from coloured feathers. (*See Plates Nos.* 68 *and* 69.)

—— **BUFF.** The Buff Orpington was first introduced in 1894. Little did the originator anticipate either the warmth of the welcome extended to the new variety by its admirers, or the virulent hostility of its opponents. It is, however, not at all inconceivable that quite unintentionally the enemies of the Buff Orpingtons materially helped the meteoric rise of the newcomers in popular favour by drawing the attention of the public to them by their persistent attacks. With regard to that much and acrimoniously debated subject, the origin of the Buff Orpingtons, the present writer feels justified in claiming to speak authoritatively, as he worked continuously with the originator of this variety, during the whole time occupied in its production. As previously stated, no Lincolnshire buff blood whatsoever was used. The variety was produced by mating Golden Spangled Hamburgh cocks with dark (or coloured) Dorking hens, the pullets produced by this cross were mated to Buff Cochin cocks, and the resultant offspring were buff in colour with white legs and feet. It can readily be imagined that many defects appeared in the early Buff Orpingtons inherited from their above-mentioned ancestors, and that those defects were only bred out with the greatest difficulty and by the exercise of the very greatest care. For example, the rosecomb of the Hamburgh, the five toes of the Dorking, and the feathered legs of the Buff Cochin, may be mentioned.

As an all-round utility fowl these birds are probably unapproached, and the numerous and well-filled classes at practically all shows testify eloquently to their popularity.

Of all the Orpington varieties the Buff is the least easily bred up to first-class exhibition standard, and, although the colour has been improved immeasurably in the last few years, it is still, in the majority of birds exhibited, far from perfect. The main defects, as far as colour is concerned, are peppery tail and flights, white in tail, flights and neck hackle, white under-colour, too red or dark on wing bow (particularly in males), uneven colouring, pale coloured shafts, pronounced lacing (either of a darker buff shade or light buff bordering on white), red in legs, and last, but by no means least, mealiness. It may be mentioned that the expression "mealiness" is used to designate a mixing of light and dark shades of buff in a feather which gives it the appearance of having been dusted with meal. It is noteworthy that white in tail and white in neck hackle almost invariably go together. In addition to this formidable list of common colour defects, the type of many cockerels exhibited is lamentably poor. Long and narrow backs, long legs, long necks and narrow chests are painfully in evidence, and the standard of type, which should be the first consideration both of breeders and of judges, seems to be entirely neglected by the majority of both in the present craze for colour.

When breeding for exhibition purposes it is of the first importance to select a cock or cockerel of pure, sound and even colour, of a rich golden shade, buff to the skin, and, of course, absolutely free from any mismarked feathers. Faults to be avoided most particularly are white lacing on breast, sootiness in under-colour, mealiness and brassiness. In build the male bird should be cobby, with short stout legs. The hens or pullets should be selected with the same care, and it is very important that they should be evenly coloured all over; they should be small in comb, big boned and short legged, and absolutely free from any trace of mealiness. A bird of either sex showing even the slightest trace of leg feather must never be used in the breeding pen. As excessively dark colour is a common failing in male birds it is sometimes advisable to use a light male bird for breeding cockerels, and a darker one for breeding pullets; but this double mating is by no means absolutely necessary. Strain is of the very greatest importance in breeding Buffs, and the introduction of a bird whose ancestry is unknown (however good the bird may be itself) almost invariably ends in disaster. The chickens are easily reared, but they require careful protection from the sun and bad weather while growing their adult feathers or they will be ruined for the show pen. The colour of the chicken feathers is by no means a safe indication of the colour of the coming adult feathers, and apparently hopelessly mismarked chickens often feather excellently after they have moulted. Birds of this variety come considerably lighter after each moult, more particularly so when they are not carefully protected from the sun and weather during the growth of their new plumage. For the sake of the future of the variety, one final word of advice may be given. Breed first for type and then for colour.

The following is the standard for colour in Buff Orpingtons. The beak, white or horn colour; the eye, red or brown, the former preferred. Comb, face, earlobes and wattles, red. The shanks, white. Skin and flesh, white. Plumage, any shade of buff from lemon buff to rich buff, on the one side avoiding washiness, and on the other side a reddish tinge. The colour must be perfectly uniform throughout, allowing for the greater lustre on the hackle and saddle feathers and on the wing bow in the case of the cock only. (*See Plates Nos.* 70 *and* 71.)

—— **WHITE.** The White Orpington variety was introduced in 1893, and since that time it has continually advanced in favour, at first very slowly indeed, but of late years by leaps and bounds, and now, thanks to the first-class utility and exhibition qualities of every individual specimen it is almost a rival of the buff in the estimation of poultry-keepers. At the time of the appearance of these birds their origin and right to be considered Orpingtons was called in question in certain quarters. In other quarters it was said that a white fowl could never become popular, as for some incomprehensible reason it was held that all white fowls were of necessity delicate, difficult to rear, and to exhibit in a pure white condition. The fallacy of this belief may be gauged by the support given to the White Orpington classes at the large shows at the present time. The production of the White Orpington variety would, in all probability, never have been attempted by its originator had it not been for a somewhat remarkable result obtained in breeding Buffs. It was found that in the earlier stages of the production of Buff Orpingtons a few pullets came absolutely snow white, remained so, and moulted white as adults. These white sports were first mated with a White Cochin cock, with the result that many good specimens were produced. Some of the pullets resulting from this cross were mated with very large White Dorking cocks, while others were put with white Game males. In this way, and after long and judicious selection and mating, the White Orpingtons as at present known were produced.

As with other Orpington varieties type must be the first consideration in breeding Whites, and though, of course, far from perfect, the average type of birds exhibited at the present time may be said to be fairly good, though cockerels (as in buffs) are inclined to be long legged, long necked, and long and narrow backed. Of colour defects the most common at the present time is "creaminess," and this is inherited, and quite distinct from "sappiness," a discoloration of newly-grown feathers which disappears of its own accord in the course of time. Birds for exhibition must be very carefully shaded or their plumage will inevitably assume a yellow tinge, which naturally counts heavily against them in the show-pen. Whites are possibly more prone to show white in lobe than any other Orpingtons, except Spangled, and this tendency must be carefully counteracted in mating. Reddish legs also are common among males and detract largely from a bird's value for exhibiting or breeding exhibition stock. What has already been said with regard to mating Buffs for the type applies also to Whites, and it is not necessary to repeat that feathered legs render a bird of either sex entirely unfit for the breeding pen. White Orpington male birds are largely used by farmers for crossing purposes, as it is found that the introduction of this blood has a most beneficial effect on the egg return, and they produce first-class early maturing table birds. The following is the standard for colour in White Orpingtons. The beak, white; the eye, red; comb, face, earlobes and wattles, red; the shanks, white; skin and flesh, white. The plumage, pure snow white, free from any foreign colour. (*See Plates Nos. 72 and* 73.)

——**DIAMOND JUBILEE.** The Diamond Jubilee Orpingtons, or, as they are now commonly called, Jubilee Orpingtons, were introduced in 1897, and took their name from the most important event in that year. This variety was not "produced" by the wholesale purchase of Speckled Sussex, as has been definitely asserted; and if, as some maintain, the same bird can win either as a Jubilee Orpington or a Speckled Sussex, the blame rests, not with the originator of the variety, but with the judges, because they do not make type their first consideration in judging, and with the breeders who ignore type in a frantic endeavour to obtain perfect colour at all costs. A moment's consideration of the standards for Jubilee Orpingtons and Speckled Sussex will make it clear that no bird ought to be able to pose as either to suit its owner's convenience.

In the production of Buff Orpingtons a certain number of chocolate-coloured and reddish-brown birds were bred. These birds were mated to old Red Dorkings, and thus by a process of very careful selection extending over several generations the present three-coloured Jubilee Orpington was obtained. They are good layers, and, although not as yet equalling members of the other Orpington varieties in size, they are most profitable table birds, as they mature at a remarkably early age. In the best strains the pullets do not become broody so frequently as pullets of some other Orpington varieties, but when broody they make excellent mothers. During the last few years cocks have been in great demand for crossing purposes, as they are very active and vigorous. In breeding a certain amount of care is required to obtain the correct distribution of the three colours. The ground colour throughout must be a reddish-brown, and each feather must have a beetle green bar and a white tip. Many breeders apparently aim at an equal distribution of the three colours on each feather; this, however, is most undesirable, as it tends to make the colouring of the birds appear blotchy, and makes them deserve their nickname of "painters rags." It is important, therefore, to select birds for breeding in which the ground colour predominates heavily. In the cocks the neck and saddle hackles, back and wing bow, are of a mahogany shade, and somewhat darker than the ground colour of the pullets. The undercolour should be buff from the roots of the feathers for about an inch, and then a leaden or sooty colour until the ground colour is reached.

The flight and tail feathers in the pullets are white and black, showing a little brown; whereas in the males the flight feathers show less brown. There is a tendency in male birds to show an excessive amount of white in flight, but by careful selection and mating, the three colours can be secured in their proper proportions. The undertail in males is practically all white, and the sickles and tail coverts are beetle green with white tips. The legs should be white. Leg feather very rarely appears, and white in lobe and side spikes on the comb are of equally rare occurrence. Double mating is practised by some breeders, but it is by no means necessary.

The following is the standard for colour in Jubilee Orpingtons. The beak, white or horn colour. The eye, orange or brown. Comb, face, earlobes and wattles, red. The shanks, white. The skin and flesh, white. As regards plumage, in the cock, the neck hackle is chestnut brown, with black centre and white tip. The breast feathers, black, white and brown. The wing bows, red or chestnut; wing-bars, black; flights, white, black and brown. The saddle hackle should correspond with neck hackle. The tail and coverts, black, with white tips, the undertail being white. In the hen the ground colour varies from brown to chestnut, with black barring, and white tips throughout. The flights and tail are black, brown and white. (*See Plate No.* 74.)

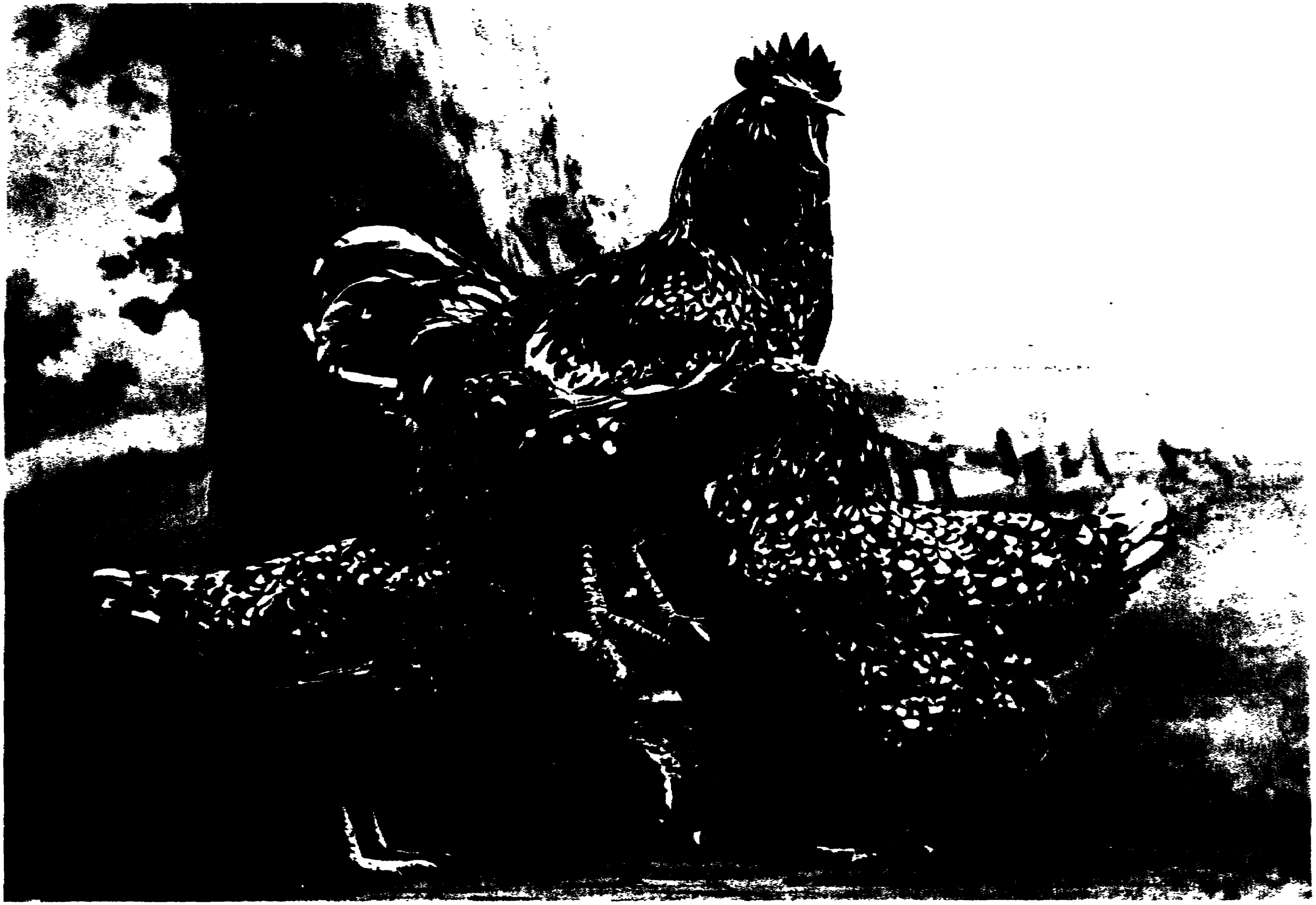
—— **CUCKOO.** The Cuckoo Orpingtons were produced by Mr. W. H. Cook, as recently as 1907, and perhaps it is early to speak of their chances of popularity; these birds, however, possess in full all those qualities which have made the older members of the Orpington family such favourites. They are, if possible, even more hardy than other Orpingtons, and will thrive anywhere, while their great size renders them particularly suitable for the table. They are free layers of large brown eggs, during the winter months especially.

Now that experts in Mendelism have made clear, even to the meanest intellects, the deepest mysteries of heredity, and anyone by buying a handbook of Mendelism can place himself on a level with breeders of practical experience extending over a life-time, it is hardly necessary to say more of the origin of this variety than that it was produced simply by inter-mating two Orpington varieties.

A considerable number of breeders wish to alter the name of this variety from "Cuckoo" to "Barred." But the strong objection to this is that barred markings are much easier to produce than cuckoo, and the result of the alteration would be that birds of different type from that of the Orpington would be exhibited, allowing Rocks that become practically white in leg where kept on a chalky soil to compete in Cuckoo classes. As no Rock blood whatsoever has been used in the production of "Cuckoos," it would be a very great pity if any loophole were left for the introduction of this blood.

These birds breed remarkably true to colour, but care must be taken to avoid any trace of "brassiness." This discoloration is apt to appear in the hackles and wing bows of male birds. Too dark ground colour is another common failing which entirely spoils the appearance of the bird. Particular care must also be taken to keep the lines of dark and light blue sufficiently broad. The Club Standard at present allows "white legs, mottled with black," but there can be no doubt that pure white legs are preferable from every point of view, and it is to be hoped that the Standard will shortly be altered in this respect, as it is now the aim of all breeders to breed only pure white legged birds. The type, though naturally not perfect, is on the whole remarkably good, and undoubtedly better in this than in some of the older varieties. (*See Plate No.* 75.)

PLATE No. 76



Spangled Orpingtons.

(The property of Mr. Art. C. Gilbert, Swanley Poultry Farm, Wilmington, Kent, England.)

Winners of 15-guinea Challenge Cup at Club Show and Firsts at the Dairy, Palace, Barnstaple, Paris, Royal Lancashire, The Royal, etc.; and sires of Dairy, Palace and Club Show winners.

——**SPANGLED.** The Spangled Orpington was introduced in 1900. Its origin is simple and, unlike that of some of the Orpington varieties, has never been the subject of discussions in the poultry press. It was found that in breeding Jubilee Orpingtons a large number of black and white sports appeared. Some of these were mated to Dark Dorking cocks, and others to big Black Orpington cocks, and by mating together the two types thus obtained the present Spangled Orpington was produced. In utility qualities the Spangled Orpingtons are well up to the Orpington standard. They are hard to beat as layers, and they carry a large amount of breast meat. They are remarkably hardy birds and good foragers. From an exhibition point of view the variety has made remarkable headway, considering its comparatively recent introduction. Individuals are of good Orpington type and breed remarkably true to colour. The correct ground colour is a beetle green, each feather must be spangled with white to such an extent that the bird appears to be two-thirds beetle green and one-third white. In pullets the tail is practically beetle green, only showing a little white at the tips of the feathers. In cockerels, however, an excess of white in tail is a common defect. Consequently for breeding, a cockerel should be selected showing only a small quantity of white in tail. It frequently happens that a cock in his second year shows more white in tail than he did as a cockerel. This will not unfit him for breeding purposes if the amount shown as a cockerel was not excessive. The tips of the tail coverts and sickles must be spangled with white. Male birds have a tendency to show too much white in flight, and this must be guarded against.

At present the legs are mottled, but certainly the beauty of the birds would be enhanced if their legs were pure white and they would also be more popular with utility breeders. The originator of the Spangled Orpingtons intended to breed all the black out of their legs eventually, and it is a matter for regret that breeders do not agree to aim for a pure white leg. As white in lobe is more prevalent in this than in any other Orpington variety, particular care must be taken to breed only from birds with sound red lobes. At the present time side spikes on the combs of male birds, and weak or twisted combs in pullets are all too common. Careful attention must consequently be paid to the improvement of combs by judicious mating. The comb must be firmly set on the head and entirely free from thumb marks and side spikes. As the pullets are such free layers, sprung combs are almost inevitable, and such combs fall on one side during the laying period. The value of points is as follows: Head, 15; colour and plumage, 35; condition, 15; legs and feet, 10; size and type, 25; a perfect bird to count 100.

The serious defects are: Much white in lobe, side spikes on comb, any straw, red or brown markings in the plumage. (*See Plate No.* 76.)

OVARY. A productive organ in the hen (*see* "Eggs—organs").

OVER-FAT (*see* "Feeding").

OVER-SHOWING (*see* "Shows and Showing").

OVIDUCT. A productive organ in the hen (*see* "Eggs—organs").

PACKING EGGS (*see* "Marketing—Eggs").

PARALYSIS. There are various forms of paralysis from which poultry suffer—for instance, there is the muscular paralysis, known as "cramp," which mainly affects young chickens; then there is the ovarian paralysis or "ovarian cramp," which overtakes young hens when commencing to lay. These are both described under other headings—as is also the paralytic condition known as vertigo or "megrims." The most serious form of paralysis, however, is the cerebral form, better known as apoplexy (which see). Here there is the rupture of a small blood vessel in the region of the brain, the consequence of which in most cases is death, more or less speedy. It is only necessary to say that in cases of paralysis nothing can be done except to keep the bird quiet; and, on the whole, it is generally the most merciful plan to destroy it at once, as there can be no future before even a great prize-winner that has once had a seizure of this sort.

PARASITES. The annual loss to the poultry keepers of the United Kingdom (or indeed of any other country), through the parasitic infestation of their stock must be enormous, not only from the direct attacks and consequent restlessness caused by the parasites, but also indirectly by the serious diseases caused by their agency. Some of the most troublesome are the partial parasites, the attacks of which may remain long unsuspected owing to the probable absence from the bodies of fowls under examination. In many cases, of course, no search is made for any such cause, and the obviously poor condition of the fowls is attributed to other reasons, with the result that the trouble increases rapidly and is communicated to all the birds of a flock. Parasitic attacks are most serious in their results in the case of young chickens, to which they are most often communicated through the agency of the mother—sitting hens being particularly liable to infestation; indeed so neglected are some "broodies" in this respect that the life blood is literally drawn from the newly hatched chicks in the sitting box. In some instances a hen so pestered will fail altogether to incubate her eggs successfully, owing to her inability to remain upon her eggs on account of the persistent irritation set up by the minute tormenters.

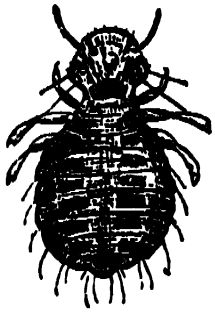
Parasitic attacks lower the vitality of the birds of any age and condition, and produce such a receptive state that various ailments are developed that might otherwise be avoided; and the infestation of a male bird is the frequent, though unsuspected, cause of infertility in eggs. The lagging growth of young stock, the troublesome habit of feather plucking, the crippling of feet and legs, the suffocation of chicks infested with round worms, and various other complications and hindrances to profitable progress, are the direct result of unmolested parasites—in or upon the bodies of the birds, sometimes in permanent and sometimes in partial occupation. A primary truth in connection with economic poultry production is that the fowls must be kept in health to be profitable, and it is the lesson of experience that unhealthy birds are the most quickly attacked by parasites, and that the most healthy soon lose their health when the infestation is unchecked. All these parasites which trouble poultry are small, and some are microscopic, but their power for harm lies in their numbers; and their multiplication is remarkably rapid when unhindered.

Parasitic animals are very numerous, and although they are variously classified they are all invertebrate; they include various kinds of worms, some descriptions of crustaceans, and a number of insects and mites. Some are suctorial, and others are furnished with mandibles or or jaws. Some live directly upon the juices of the creature upon which or within which they exist, and others live more indirectly at its expense by consuming a portion of its food during the process of digestion; whilst others again live upon skin products, chiefly causing harm by irritation. Some are entozoa, and others are epizoa, *viz.*: the former live inside, and the latter upon the body of the attacked.

——**EXTERNAL PARASITES.** The external parasites of fowls are represented by some species of insects and mites, and it is necessary to draw this distinction inasmuch as mites are not insects properly speaking, although often referred to inclusively with fleas and other true insects. A noteworthy mark of distinction being the fact that true insects have six legs, whilst mites possess eight, in four pairs. The parasitical insects with which fowls are infested consist of fleas and lice, which are included in one of the classes of articulated animals, having articulated or jointed members. The composition of an insect's body is a series of rings, of which the head is one, the thorax three with the legs attached; and the abdomen nine, or less in some cases of modification. The legs are jointed, with thigh, shank, and two lesser articulations.

—— **HEN FLEA.** To commence with the larger of the two principal insects attacking fowls, it should be noted that the hen flea is the only species of the order that lives upon the fowl—and also attacks most other birds. It is usually present, in large or small numbers, in fowl runs, houses, and nesting places—very often thickly infesting the material with which the nests are made. The mouth of the flea consists of two lancet-like jaws in the form of a suctorial beak, with a piercing tongue; it is dark in colour, and possesses no wings. It lives by blood sucking, and in sufficient numbers will materially weaken the bird attacked, and put it otherwise out of condition by the irritation and unrest it produces. Being a partial parasite it mostly attacks birds at night, or when sitting or visiting nests to lay; retreating to corners and crevices at other times, it is often unsuspected. The female flea lays about a dozen white sticky eggs in the refuse or cracks of the nest and sheds; the larva is a small reddish white worm, full of activity, which during the course of about a couple of weeks envelops itself in a cocoon, and changes into a pupa from which the flea itself emerges after about another fortnight. Breeding is continual, but most active in summer or warm weather.

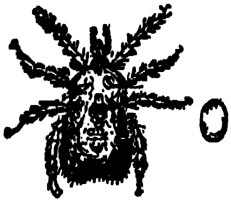
—— **LOUSE.** This is a genus of insects, and the type of a large family. The bird louse is distinct from the human and the mammalian louse, the same species being seldom found on different species of animals—although some animals are troubled with more than one species of louse. Several species prey upon the fowl, and they are characteristically different from others; and turkeys, ducks, and geese, each have their distinct species. The louse is more or less transparent and flat as to its body, with the segments of the thorax and abdomen plainly defined; but it is in the mouth formation that very characteristic differences are observable, that of the bird louse being formed for biting, whilst that of the mammalian is piercing and tubular—with a sucker. The bird louse lives upon the products of the skin and portions of the feathers, yet although they do not suck blood as the fleas do, the terrible irritation they set up is probably more harmful in its effects. The species are all very minute, and they deposit their eggs upon the feathers and hairs—securing them by means of a sticky substance. They breed very freely, and their eggs hatch within ten days, the young being immediately active. They live for a considerable period, undergoing several moults or



Fowl Louse (*Goniocoutes Hologaster*)
Greatly Enlarged.

casting of their skin. Some species appear to live always upon the head or some other particular part of the fowl, some wander all over the body indiscriminately, and others prefer the wings and tail; and all may be found in dark, dirty, damp, or foul corners or crevices of the houses.

—— **MITES.** The name of mite is often given to the genus Acarus, as defined by Linnæus, the species of the acarides being many and small; they are oviparous, prolific, and usually have eight legs. It should, however, be noted that some begin life with six legs, the other pair developing later. In some the mouths are formed for biting, and in others for sucking; and some authorities claim that as the literal meaning of "mite" is "the biter," the term should be limited to those with biting mandibles. Some are partial parasites and others are permanent, whilst others live under the skin. Those which are most commonly troublesome to fowls are the Red Fowl Mite, the Depluming Scabies, and the species which produces the disease called Scaly Leg—the mite (*sarcoptes mutans*).



Fowl Mite.
Greatly Enlarged.

—— **RED FOWL MITE.** This mite (Dermanyssus avium) is particularly minute, and varies in colour, with the quantity of blood consumed, from a dirty white to a bright dark red. It is particularly troublesome in summer and hot weather when its multiplication is remarkably rapid. It is a partial parisite of nocturnal habits, and frequently infests poultry houses and chicken coops. It is provided with a sharp beak, in both sexes—the female being the more blood-thirsty. It is important to note the ability of this creature to live for months without food, so that its destruction is a difficult matter. The young of this species are at first only provided with three pairs of legs, the fourth growing later.

—— **DEPLUMING SCABIES.** This is a species of Itch-Mite, one of which attacks human beings, another producing mange in dogs, and yet another infests sheep. This species (*sarcoptes lævis*) is a cause of feather eating in fowls—a trouble usually attributed to other causes, in ignorance of the minute parasite hidden at the roots of the feathers. It is in appearance a tortoise-like creature, and is studded with bristles. It is almost round and only about one-eighth of an inch in length, and a characteristic of the species is the termination of its head in two pairs of mandibles. It is usually more prevalent in spring and summer, and causes great irritation by burrowing at the base of the quills.

—— **SCALY LEG.** Although the disease known as "Scaly Leg," and its treatment, is dealt with under a separate heading, it is necessary to the completeness of this section to refer to the parasitic origin. At one period the trouble was referred to as "elephantiasis," and was said to originate in exposure to cold, wet, or walking in snow; and was supposed to be confined to Asiatic breeds only. In reference to the latter supposition it is possible that it may be more common in the case of feather-legged fowls, but if so it is entirely due to the accident of feathering, and there is no implication of the predisposition of one breed more than another—the opposite view being held in ignorance of the parasitic origin.

The mite (*sarcoptes mutans*), which is the cause of this disfiguring disease, takes up its abode beneath the scales of the

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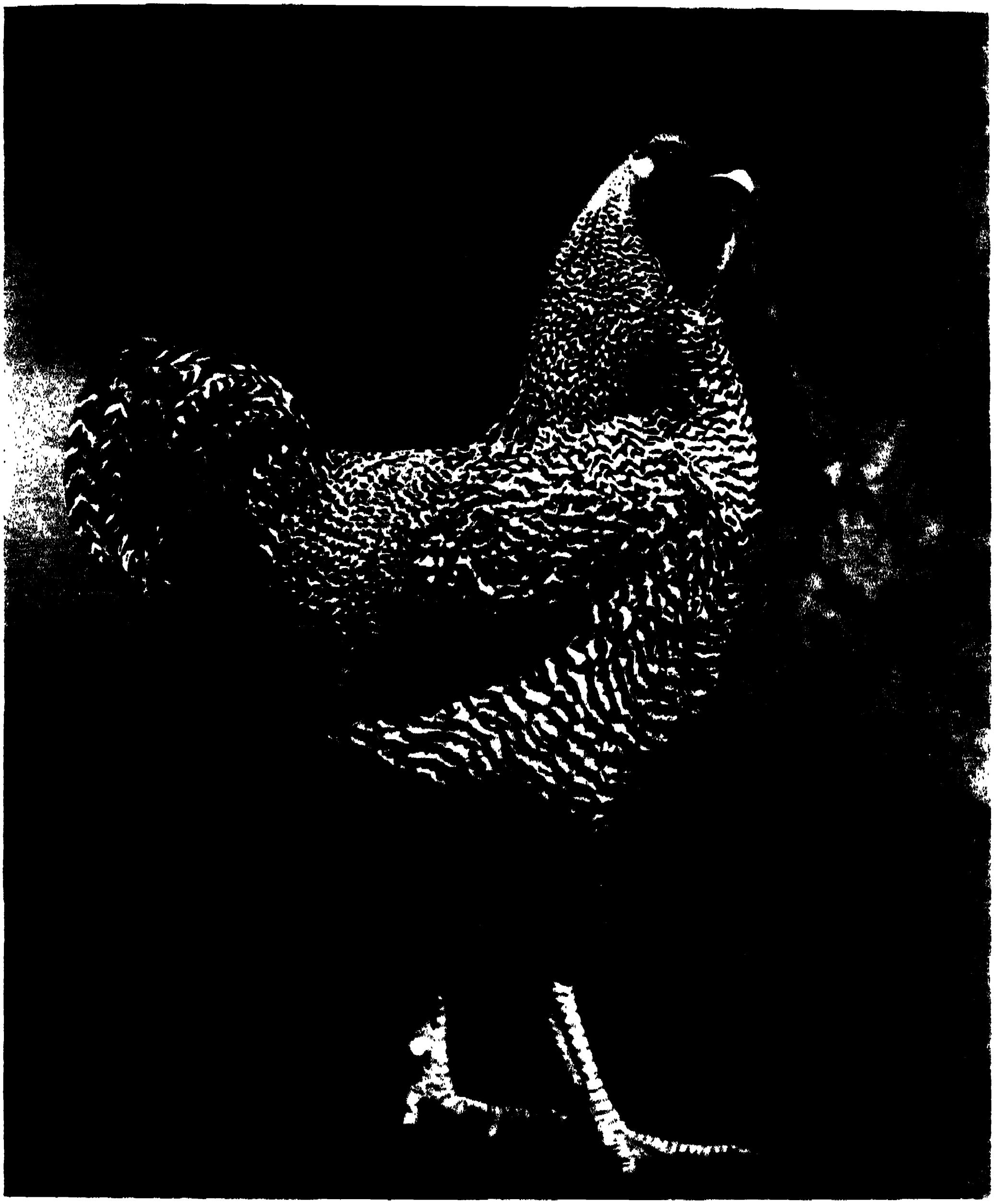


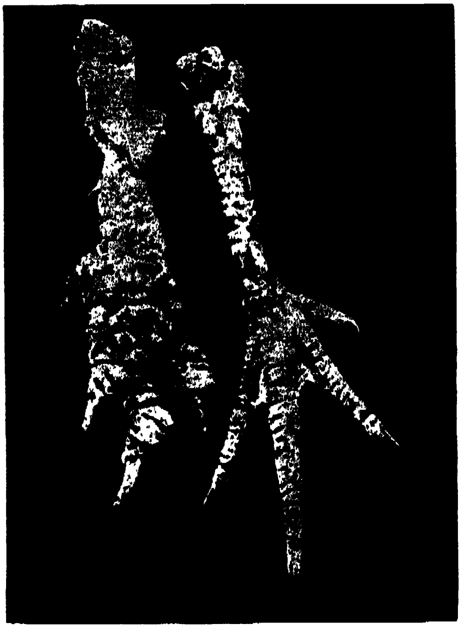
Barred Plymouth Rock Cockerel.

(*The property of Mrs. Wilkinson, Burrow House, Scotforth, Lancaster.*)

Winner of 1st and Challenge Cup, The Verrey Challenge Trophy and The Grand International Challenge Trophy for best Plymouth Rock, Alexandra Palace, London ; 1st and 3 Specials and Lord Mayor's Cup, Dairy Show ; 1st and Cup, Birmingham ; 1st and Challenge Cup, Club Show, Leeds ; 1st and Special, Kendal ; 1st and Special, Lancaster ; 1st and Cup, Morecambe ; was never beaten.

legs and feet—where it lives and breeds. The appearance of the scales of the legs and feet, which become separated and raised with an accumulation of excretion between and over them, is very prevalent and a much more serious matter than is generally supposed, on account of its contagious nature. There is a frequent consequent enlargement of the feet and shanks, and in severe cases of advanced disease the birds become quite crippled.

All parasitical insects and mites are encouraged and increased by insanitary conditions, and held in check by cleanliness, ventilation, light, and general tidiness in the surroundings ; the particular remedies applicable in each case will be found under the headings of the various diseases caused by the attacks of parasites.



Scaly Leg.
Illustration showing Healthy Leg and Scaly Leg.

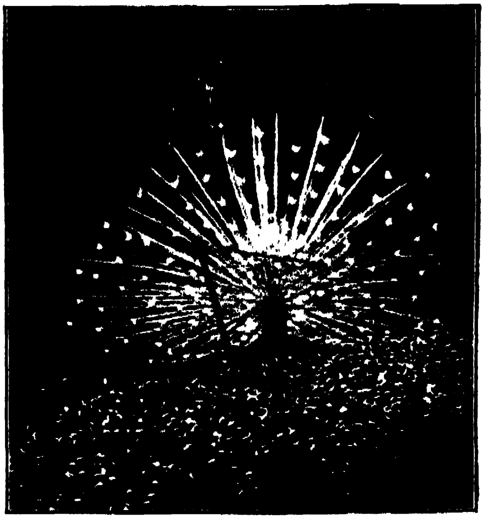
—— **INTERNAL PARASITES.** Although there are several parasites which attack fowls internally, of which the chief are worms, there are only one or two really serious diseases caused directly by them ; of which the most harmful is perhaps that known as gapes, which is directly caused by the gape-worm

—— **GAPE-WORM.** The Gape-worm is a nematode or round worm of peculiar characteristics, the small male worm being permanently attached to the female at a point nearer the head than the tail; the two representing a fork, and by some known as the Forked-worm in consequence. It is red in colour, the female about three-quarters of an inch long, and the male about one-fifth of an inch. These worms are usually found in clusters in the chicken's wind-pipe or bronchial tubes, where they irritate the lining membranes and produce inflammation ; and if present in sufficient numbers will result in suffocation. The mature female with her complement of eggs usually becomes ejected by the fowl, in an attack of coughing ; she then suffers disintegration on the ground, upon which her eggs ($\frac{1}{250}$th of an inch long) are scattered. As each worm produces a considerable number of eggs it will be seen how easily they are communicated from one fowl to another, through the medium of the soil and the food placed upon it. In water and damp situations the eggs hatch small whitish embryos, and these as well as the eggs develop into gape-worms when they have gained an entrance to the chicken's air-passages. The Gape-worm parasite is chiefly troublesome to chickens and young turkeys, but also causes disease among game birds, and many wild birds, small and large ; the latter fact sufficiently accounting for its otherwise unexplainable dissemination. (*See* " Gapes.")

—— **INTESTINAL WORMS.** These comprise round worms (*Nematodes*) and flat worms (*Cestodes*), and a species of the former is a common cause of debility and loss of condition. The White Intestinal

worm is less than half-an-inch in length and generally infests the smaller intestines —in companies of about a dozen, or in sufficient numbers to block the passage of the alimentary canal. A common symptom of infestation being an abnormal appetite, coincidentally with poor condition. It is supposed that the worm gains entrance, as eggs or embryos, through the medium of foul water.

PEA-COMB. A small, low comb having the appearance of three combs side by side (*see* "Combs").



Pea-Fowl. A Fine Male Bird.

PEA-FOWL. The Pea-Fowl is a genus of gallinaceous birds, embracing two species, of which one is widely known in a state of partial domestication—its chief claim to attention now-a-days being its great beauty of plumage, which makes it such a suitable fowl for the stocking of parks, gardens and other ornamental grounds, although at different periods in history it has had a more utilitarian value as an article of diet at banquets, furnishing an opportunity for the display of wealth rather than anything else. It must, however, be affirmed that the young birds are excellent for table purposes, apart from considerations of expense.

The history of the partial domestication of the Pea-Fowl is obscure, but it is evident that it has been kept in some sort of captivity from very ancient times, and it is by some supposed to have been known and kept by Solomon, although considerable doubt exists regarding the real character of the bird referred to as a Peacock in the Old Testament. That it was well known to the Greeks and Romans is undoubted, and the mediæval references to the bird are numerous; nevertheless, in comparison with many other birds kept in domestication, the progress of the Pea-Fowl has been very inconsiderable in the same direction, and it has remained half-wild for all practical purposes. It is, therefore, useless to attempt to keep it except in very favourable circumstances, as regards the character and extent of the range, and efforts to breed and rear these birds in any but a semi-natural state are almost foredoomed to failure. The Pea-Fowl prefers to roost out-of-doors, and is not easily induced to use any form of provided shelter, and the hen prefers to nest in a secluded position and manage incubation and rearing without any sort of interference: but if it is left alone to its own devices in a suitable situation it will generally do very well, and hatch out and rear good broods. Indeed, any other method of rearing is almost impossible, owing to the fact that the young remain with the hen (and apparently require her attention) for as long as six months or more, and in many cases a hen will mother her brood all through the winter and right on into the spring. When it is found possible to make these birds use a house, in which to roost, it should be of the open-fronted wire-netted type.

Upon a suitable extent of land the Pea-Fowl is an inexpensive bird to keep, being a first-rate forager and finding most of its food in the fields and woods: but when the range is deficient in size or character, and the season is unfavourable to a full supply of natural food, the feeding should be very similar to that of other fowls—especially turkeys.

——**COMMON PEA-FOWL** (*Pavo Cristatus*) is the species most generally seen in public and private grounds, and needs little in the way of detailed description. Its characteristic colours are purple on head, neck and breast, with a blue sheen, the head being crowned with twenty-four feathers, webbed only at the summit, and green and blue in colour. Green is the principal colour of the back, with coppery lacing; and the wings are light coloured, with black and blue markings and shading. The primaries and the real tail feathers are chestnut, and the tail coverts a glossy green, with eye-like markings at the extremities. The under parts are black. The fan-like erection of the "tail" is really composed of the tail covert feathers, which in erection are supported by the short feathers of the true tail. The general characteristics of the bird are size of body, medium-sized bill, nearly naked cheeks, crested head, long feet and a single spur, and short wings; the neck is long and slender, and the head small in proportion to the size of the body. The hen is smaller than the male, and her colouring much more subdued—chiefly brown.

Some Fine Specimens of Pea-Fowl.

——**JAPANESE PEA-FOWL** (*Pavo Japonensio*, or *muticus*) is possessed of a larger crest, webbed from base to summit, and the colours vary considerably, being in general more metallic in character. The plumage of the neck is green and gold, that of the back being bronze, green and brown: and the tail coverts a brilliant green, with a golden sheen. The cheeks are yellowish. In this species also the hen is smaller than the cock, and her plumage approximates in its subdued tints to that of the common Pea-hen.

The Common Pea-Fowl is a native of India, Ceylon and the neighbouring islands; and the Japan species inhabits the south-eastern parts of Asia and the islands. But they are really found in nearly all parts of India, Siam, etc., usually in very large flocks. The natural habit is to roost in trees, but to nest and feed upon the ground; and in breeding them in partial captivity the best results as regards fertility are found to follow the mating of a cock with two or three hens--the period of incubation is twenty-eight days. During the moult, which is usually a very rapid process with these birds, the feeding must be of a suitable character to help the birds through a trying period; and in this connection it may be noted that the young moult in their second year, until which time the colouring of the cocks remains very similar to that of the hens--the full plumage in all its shades and markings not being developed until the third year.

So-called Peacock-Pheasants are not of this genus, and the Black-winged Peacock is not a distinct variety, but may be classed as a "sport" of the Common species — as also may white and pied specimens which are seen from time to time.

PEAT MOSS (*see* "Litter").

PEDIGREE. A register of descent from ancestors: lineage (*see* "Breeding").

PEKIN (*see* "Ducks")

PEKIN BANTAMS (*see* "Bantams").

PELLET. A small lump of meal in an elongated shape used in cramming birds by hand.

PEN. A cock and several hens.

PENCILLING. The markings of each feather in alternate bars, silver-pencilled and golden-pencilled, as in Hamburghs, and a different form as seen in the Dark Brahma and the Partridge Cochin, where the bars follow the form of the feather.

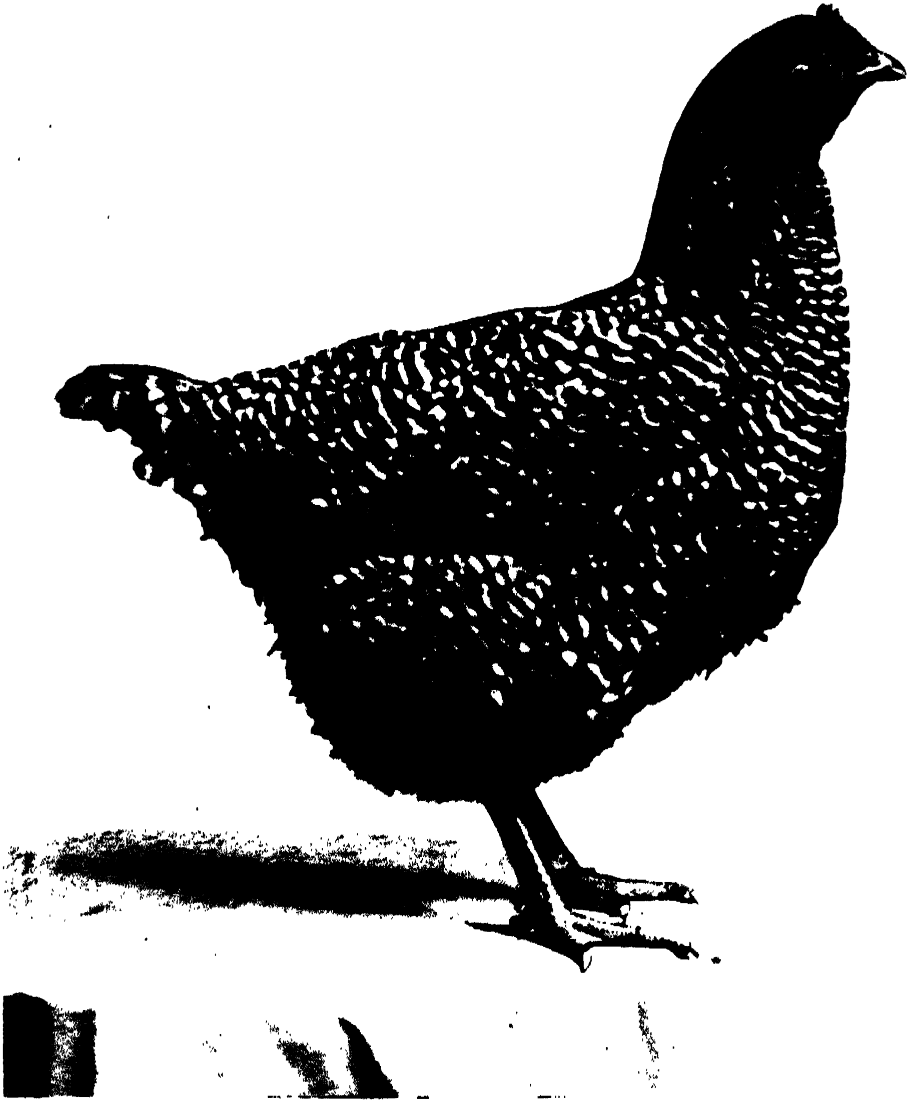
PENS (*see* "Accommodation").

PERCHES (*see* "Houses").

PETITS POUSSINS. The trade in *petits poussins* is a comparatively new one in this country, and it has not as yet reached large dimensions. As a matter of fact, probably ninety per cent. of the birds disposed of in the London and other first-class English markets have been imported from abroad, chiefly from France, and in a much smaller degree from Denmark and Belgium. Provided the conditions for early rearing are favourable and one is able to devote persistent attention to the birds during their very brief life, the trade is a profitable one, as *petits poussins* are sold only among the wealthier classes, who do not mind paying what seems a very stiff price for these small but very meaty chickens. A very large trade is carried on in the United States in what is termed "broilers," which closely resemble *petits poussins*, except that the former birds generally weigh at the least three-quarters of a pound, whereas the latter rarely attain more than six or eight ounces. For only about three months out of the twelve is there any demand for this class of produce, that is, during the last week of March, April, May and the first part of June, and thus the hatching must be

time during this period, preferably during the latter half of April, and the former half of May. As already mentioned *petits poussins* should weigh about six or eight ounces each, and if a suitable variety has been selected, if the feeding

PLATE No. 78



Barred Plymouth Rock Hen.

(*The property of Mr. James Bateman, Milnthorpe, Westmoreland*).

Winner of 1st and Challenge Cup Plymouth Rock Club Show, Kendal; 1st Plymouth Rock Club Show, Leeds; and 2nd Crystal Palace, 1908.

and management are satisfactory, and if the conditions are favourable this weight should be reached in about a month or five weeks. It is difficult to give many figures regarding prices as these vary so greatly with the season, and with the law of supply and demand. If the rearing season is an unfavourable one in France, the price for good specimens will range extremely high, while, on the other hand, a good season abroad generally means that the supply is large and prices somewhat low. The average price during the last few years has been about 1/6 to 1/8 each, for ordinary birds, and about 2/- for the really first-class specimens.

Nearly all breeds will produce fairly good *petits poussins*, but there are, of course, a few that stand out prominently. When a chicken is only a month old there is really little or no flavour in its flesh, while it has not had time to become at all hard or stringy. The most important points to look for in choosing a breed for producing *petits poussins* are rapid development, hardihood, white flesh, and a small proportion of bone and offal to meat. The point of rapid growth is an exceedingly important one, for the duration of the market is so short and prices fall so quickly once the decline begins, that a week or a fortnight longer in reaching killing size may reduce their value by a shilling. The Dorking makes the finest *petits poussins*, but this variety is only recommended when the conditions are favourable, as it is no by means a hardy breed, and it cannot withstand very trying circumstances. The Faverolles and the Buff Orpington may both be recommended, as they possess all the necessary requirements, including hardiness. Neither is a very rapid grower, but this is compensated for by the ease with which both can be reared. Rearing during the early months of the year is never a very easy matter, and if a delicate breed be selected this difficulty is greatly increased. The chief breeds employed in the United States for producing "broilers," are White Leghorns, White Wyandottes, and Plymouth Rocks. For the "squabs," that is, the small birds weighing about three-quarters of a pound each, the first named is the one generally used, while for the larger birds up to about three pounds the couple, the two latter breeds are preferred. The White Leghorn grows very quickly during the first few weeks, but its flesh soon becomes stringy and tough. For *petits poussins* these breeds are unsuitable and not to be recommended.

The dry system of feeding is unsuitable for *petits poussins*, and they should be fed upon soft food, mixed with plenty of sweet milk, from the very first. Feeding upon grains alone, so excellent for chickens generally, renders the flesh hard, besides which, under this sytsem, development is somewhat slower. Not only should the food be mixed with milk instead of water, but milk should be regularly supplied for drinking purposes. During the first week hard boiled eggs, chopped up finely, mixed with biscuit meal, and moistened with skim milk should form the staple food. Sometimes bread crumbs are used in the place of biscuit meal, and while it encourages growth and forms flesh of excellent quality it is rather liable to cause bowel trouble. There are some extremely good cooked foods on the market, and these may take the place of the biscuit meal. The eggs may be discontinued at the end of the first week or ten days if the chickens are thriving satisfactorily. As the desire is to encourage the chickens to eat as much as possible, a variety of foods should be supplied, care being taken to prevent the chickens tiring of a food, and thus eating insufficient. Ground oats, oatmeal, barley meal, middlings, and boiled rice are all useful, provided they are carefully prepared and thoroughly swollen out. During the first fortnight feeding should take place five or six times a day, gradually reducing the number of feeds until four times is sufficient. Some green food should be supplied daily, or if this is scarce some steamed clover hay.

The final preparation of *petits poussins* must be very carefully performed, particularly as the birds are extremely small, and the least carelessness in plucking or packing easily tears the skin. The chickens should be starved for eighteen or twenty hours previous to killing, and plucking should be very carefully done, as the skin is exceptionally tender. The birds should be absolutely cold before they are packed. Before packing get a cloth and wipe beak and eyes. Pack as follows: Get a small light box or basket, then a piece of paper (white is the best) and make a small roll of one sheet, lay it on bottom of box or basket in centre lengthways, then cover the bottom with a sheet of white paper (the idea of the roll of paper in centre, is to make the birds' sterns fit well at sides of box, they then look much better when unpacked). Then pack birds with stern to sides of box, and head pointing to centre of box, fill the row up so that they fit tight and that will keep them from shifting about, then lay a strip of paper over their heads and pack another row in the opposite side of box to them; that will bring them level again. Then make another roll of paper and continue packing till the box is full. Put the number of birds in the box on a contents note, fold it up with your address on, then put it under one of their wings, cover a sheet of white paper over *poussins* and tie down lid. In the warm weather if procurable use bracken fern "green" for packing, instead of paper; it will keep them much cooler.

"PICKLED EGGS." A common mode of referring to preserved eggs (*see* "Eggs—preserving").

PILE. When the plumage is, as it were, piebald, the cock being white, with bright sable or chestnut hackles, back, saddle-hackles, wing-bow, also secondaries and flight-feathers; the hen is white, shading into pinkish-brown at the breast. Leghorns, Game and Game Bantams have varieties of this colour. They are bred from a coloured cock mated with white hens, or *vice versa*.

PINIONING. An operation performed upon the pinion to prevent flight; a severance of the extensor muscle of the wing (*see* "Waterfowl, Ornamental").

PINTAIL (*see* "Waterfowl, Ornamental").

PIP. Contrary to general supposition, "pip" is not a disease, but merely a symptom of liver complaint, closely resembling a furred tongue in a human being. The practice obtaining amongst old-fashioned folk of removing the "pip" from the tongue of a fowl would be too absurd almost to take notice of, were it not that the practice is a very cruel one, and needs to be combatted whenever there is opportunity of doing so. The hardening of the skin of the tongue is merely a sign of parched dryness due to the presence of indigestion and liver complaint, and to deliberately scrape or break this off is simply to add a sore tongue to the bird's other troubles; whereas if the true meaning of this pip-tongued condition is recognised and suitable measures are taken to deal with it, the dryness will in due course disappear, and the bird will be saved from more serious trouble of the liver or other internal organs. Whenever, therefore, a fowl is seen to be suffering with a horny tongue, it should be treated as if it were suffering from liver complaint, and the tongue itself should not on any account be interfered with.

PLANNING OF POULTRY YARDS (*see* "Accommodation").

PLANT. The appliances and materials of a poultry-producing establishment.

PLUCKING (*see* "Marketing").

PLYMOUTH ROCK. This is one of the many good breeds for whose production American poultry-keepers are solely responsible. Like the Wyandotte and (in part) the Leghorn, it was originally imported; but although not a native of this country, it is now an almost essential part of our national poultry. There are four varieties of the Rock—that is to say, four varieties accepted and standardized by the Plymouth Rock Club. The chief and best-known is, of course, the Barred. The Barred is known to everybody who keeps fowls, to the farmer particularly it has become a leading feature in his flock. The Buff is rather the prerogative of the "utility experts," used by them to prove certain things and to do certain things. The White is not generally known, rather from the fact that it is not very distinctive than because it has nothing particular to recommend it. The Black Plymouth rock is almost exclusively the production of North Country breeders and, save at the largest shows, is little seen or exhibited. The origin of the original Barred Rock has not been difficult to trace, it is surrounded by none of the mystery that in other breeds has led to so much useless controversy and discussion. Two things are morally certain—that Black Java and Dominique blood formed the basis of the breed. Further, we may probably take it that the Cochin played some part and that in a few leading strains there is a streak of Brahma. Undoubtedly Asiatic blood has been used, but in what quantity one cannot definitely say—it is a matter of strain.

Several people (Americans) claim to have originated the Rock, and although it is possible to say when and by whom the breed was first exhibited, it is not equally easy to lay hands on the actual originator. The name itself is puzzling. Plymouth Rock suggests some place where the fowls may have been produced. From a fairly credible source we are told that a certain Dr. Bennett produced a breed and called it the Plymouth Rock after the name of his house or village. But the birds he brought out have no actual connection with the breed of to-day. The first specimens seen in public were those exhibited by Mr. M. A. Upham, of Connecticut, U.S.A., in 1869. That strain was perpetuated and is probably even still extant. The Barred Rock reached England in 1879, and to a fancy that was scarcely yet beginning to realize its own strength it gave an impetus and encouragement for which we may well be grateful. This year 1879 is one to be underlined in the annals of the fancy, for it ushered in a new and progressive era.

——**THE BARRED.** The Barred almost at once won the approval of the general public. Here was something good to look at, something good to breed for, and withal something rather novel. Within a year or two a great demand sprang up for the breed and for a long time higher prices were paid for high-class Plymouth Rocks than for anything else in the poultry fancy. It was only natural; it is only natural now that people are willing to pay exceptional prices for good specimens. Very few know how to breed first-rate Barreds; those who do reap the benefit.

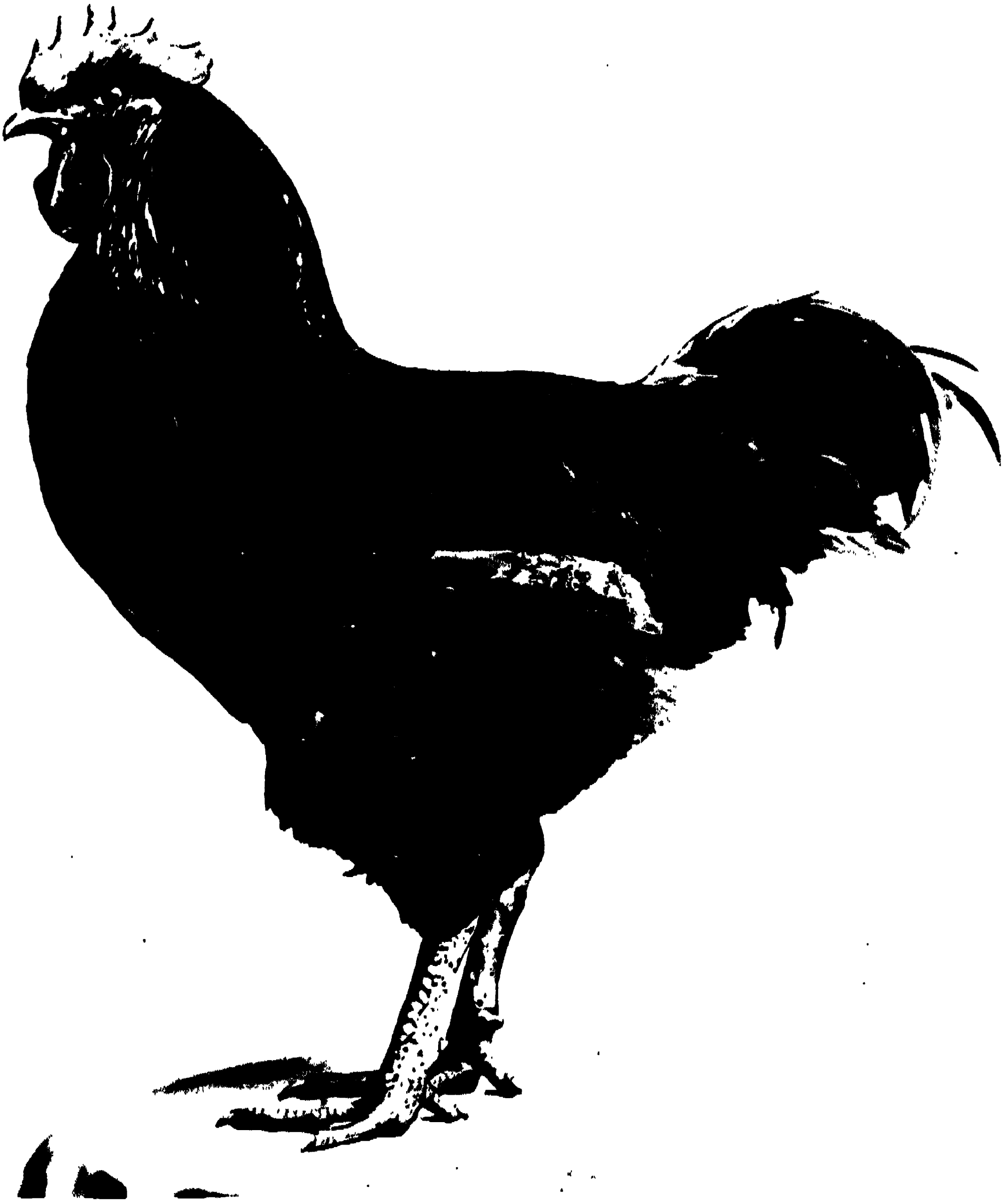
There can be no doubt that of the many intricate present-day breeds the Plymouth Rock is one of the most difficult to produce in accordance with the requirements of the standard. The difficulty lies not so much in the markings as in the *colour*. At the start a light shade was arrived at, and this was comparatively easy to get in combination with clear crisp barring. Most authorities now describe the correct ground colour as greyish-white, but when seen on the bird itself no such impression is given. It would seem to be darker, with a certain admixture of iron blue, for which appearance, however, the barring itself must nowadays be narrow and very regular; in some show specimens it approaches the narrowness and regularity of the pencilling of a Hamburgh. Although the whole effect is decidedly good, ambition in this direction may well be carried too far. The combination of straight barring, barring that is deep and sheeny as well, with the greyish-white colour is heart-breakingly difficult to obtain—easier to obtain now, however, than ever before. It can be taken as a fact that little will be done in the matter of breeding for exhibition unless two pens are mated—one for the production of cockerels, the other for pullet breeding. The majority of amateurs have not room for two breeding-pens and in that case a strain of pullets can be founded and a pullet-breeding cockerel selected from those annually bred. In mating one thing must always be borne in mind, never mix your strain when once it is started, *i.e.*, if you purchase a stock bird, do so from the same breeder who originally supplied you with your birds. In the Rock fancy it is a common saying that an out-cross, however carefully done, will put your operations back three years at least.

From the best-mated pens a number of black pullets and a few very light cockerels will always be bred. People differ as to the value of the pullets for stock, but on the whole it may be accepted that the policy of mating them with a barred cockerel of rather light shade is a dangerous one. Subsequent generations will probably produce an unduly large percentage of pullets entirely black or far too dark in colour. Apart from such doubtful experiments, in breeding cockerels or pullets certain rules must always be adhered to. A fault in the cock must be made good in the hens. If—as in the case of many of the best cocks—his wing ends are dark or indistinctly barred the hens must be very distinctly barred, from wing bows to wing tips. Likewise, if his body colour is good and his hackles are too light, the ground shade of the hens must be an even "greyish-white." The hens or pullets will very probably be coarsely barred, the barrings too broad and the black running into the ground colour. That fault has to be counteracted in the cock—he must be finely, albeit richly, barred.

Opinions differ strongly as to the colour of the two sexes in the two pens. For the breeding of cockerels, however, it is safe to mate a male of standard colour with females a shade or two darker; for the breeding of pullets put hens and pullets of standard colour with a colour cock rather of the light shade. The one fatal proceeding according to the writer's experience is to mate together birds of the two opposite extremes—the very light and the very dark; to do that is to court failure. Through all this, Rock type and shape must never be lost sight of. Happily the shape is uniformly good. The same cannot be said of the type—at all events of the exhibition type; but this seems to be the way of all breeds nowadays. The essential differences in type between a Plymouth Rock and a Wyandotte must always be remembered. The former may almost be described as standing high on the leg, possessing quite a considerable amount of thigh, whereas the latter shows little thigh and only a moderate amount of leg. But then there is the even more distinctive difference of shape, length, and slope of back. In the Rock the stern is but lightly developed and the back of the hen is almost straight. The Wyandotte, on the contrary, is rounder, deeper, and the hen should have a distinct cushion.

The Barred Rock, though not a great utility bird, is none the less possessed of qualities that entitle it to the denomination of a general-purpose breed and a very serviceable one. The hens are not on the whole, very prolific, but they are reliable, consistent layers, capable of individually producing 140 eggs a year on a farm and under decent management, there are possibly few better winter layers; but at the commencement of summer the hens seem to slack off a bit,

PLATE NO. 79



Buff Plymouth Rock Cock.

(*The property of Mr. James Bateman, Milnthorpe, Westmoreland*).

Winner of 1st Crystal Palace, 1st Plymouth Rock Club Show, 1907, etc.

as heat does not suit them so well as cold or bracing air. Two fallacies have to be dispelled regarding the practical side of the Rock. One is that it lays brown eggs, the other that it is constantly broody. Neither of those suppositions—for such they must be—is correct, since the hens of whatever strain almost invariably lay tinted or cream-coloured eggs, and they are remarkably seldom broody. When, indeed, they do go broody, no better sitters or mothers could be desired, but, unless fed with that end in view. it is seldom they desire to do so.

The cockerels, being big birds, provide plenty to dine off, carry a large amount of breast meat, and in this respect are generally satisfactory; but, of course, with yellow flesh and legs they are far from ideal, and the meat itself is not of the quality demanded by the best markets. For accommodating a certain class of purchaser, however, the salesman pays a good price for well-prepared birds of this kind.

Of all the sitting breeds, the Rock may be described as the hardiest. No adversity in the matter of climate or soil would seem to affect it, and for this reason it is undoubtedly one of the best farmer's fowls we have. With that we can leave the Barred and pass on to a variety of later development. (*See Plates Nos.* 77 *and* 78.)

—— **THE BUFF.** The Buff was not admitted to standard until the year 1893, and although now fairly popular, it, of course, possesses nothing like the status of the Barred variety. Primarily it may be considered a utility fowl—that is to say, it is more useful than ornamental. At the big shows classes fill well, and there is a fair demand for good specimens in exhibition circles. In the cocks breeders have to contend against an excess of yellow or orange pigment and many of the best birds now shown run far too ruddy on wings. The richness of the colour, moreover, intensifies with age. The hens, on the contrary, from being a shade light as pullets become more anæmic in colour the older they grow. Buff Rocks are, therefore, somewhat difficult to breed of even colour, but more difficult still to breed of sound colour. A Buff that is buff to the skin is a valuable acquisition and should always be reserved for breeding. Almost as important in mating up is it to have a cock of similar shade to the hens. Two dissimilar shades are certain to clash, and the result will be unsatisfactory.

Whatever be the value of the Buff Rock as a fancy speculation, it is assuredly a valuable utility breed. That it is one of the three best winter layers we have, the writer has no hesitation in asserting. In the great six-months' laying competition (100 pens competing) of 1908-09, a pen of Buff Rocks won comfortably, and that feat alone entitles it to be ranked with the best. It is a better layer than the Barred beyond doubt, but like its sister variety, the Buff seems suited for a farmyard existence. Hardihood it possesses indubitably, and as the hens are reliable sitters and mothers, albeit infrequently broody, they can be relied upon to thrive and do their duty on a farm.

The cockerels are large and very edible, but from a marketing point of view would not be so remunerative as the Barred or the White. On the whole, however, the Buff Rock can be thoroughly recommended—as a utility breed it can hardly fail to give satisfactory results. (*See Plates Nos.* 79 *and* 80.)

—— **THE WHITE.** It is not difficult to surmise how the white variety came into existence. Rock breeders not infrequently come across almost—sometimes quite—pure white chickens, and almost as a natural result these were bred into a new variety. What spade work had to be done was accomplished in the United States; the first Whites were imported into England about 1880.

In this country the variety has never

been popular—it clashes with the White Wyandotte and the public will not impartially patronise the two. This is unfortunate for the White Rock; it is a handsome and typical bird and a useful one to boot. An improvement is noticeable every year in colour and type, but the legs have always been rather a weak point. In regard to type, however, it is as characteristic as in the Barred and more so than it is in the other two varieties.

The White Rock is also highly spoken of as a layer of large eggs and as a table fowl of more than average merit. It is certainly hardy—as are all Plymouth Rocks—and would seem to be genuinely valuable to the practical poultry keeper. Of course, there is not as yet much money in the White, but with many people that is a secondary consideration: and this is an amateur's rather than a professional fancier's fowl. (*See Plates Nos.* 81 *to* 84.)

—— **THE BLACK.** The Black Rock is, of course, the result of "sports" of the Barred variety mated together, or, maybe, of the Black pullets mated to Barred cockerels. It cannot be described as very distinctive, but good specimens of either cock or hen are handsome enough. Clear, yellow legs, in combination with plumage of good depth and sheen are the desiderata and also incidentally the stumbling block: but despite difficulties in these directions several good birds have been exhibited during recent years. The Black Rock is undoubtedly a very good layer—so are all varieties produced from "sports" of some other colour. For the present, however, its aspirations to ultimate popularity are seriously jeopardised by the "booming" of another—and possibly less worthy—variety of a different breed.

PNEUMONIA. Pneumonia, or inflammation of the substance of the lungs, is one of the commonest causes of death among poultry. Its symptoms are not altogether easy to distinguish, but by the aid of a clinical thermometer a very shrewd guess can generally be made. A fowl's normal temperature is about 104 degrees Fahrenheit. If when the bulb of the clinical thermometer has been inserted under the wing for about three minutes, the register records a higher temperature than that, this is evidence that the bird is feverish—which means, in other words, that there is inflammation somewhere. So when a bird is suffering from bronchial or lung trouble of any sort, an abnormally high temperature points to the fact that inflammation in all probability is in the lungs. The first essential for the cure of all lung troubles is to provide a moist, warm atmosphere. A bird affected with pneumonia or inflammation of the lungs must be kept in an apartment where the air can be kept in this humid condition by means of a bronchitis kettle, to the water in which has been added a small quantity of carbolic acid or coal-tar antiseptic. Apart from that comparatively little can be done. As far as medicine is concerned, aconite tincture in one-drop doses every hour (the dose being given in a teaspoonful of water) whilst the symptoms are acute will tend to reduce the inflammation. The less food, the better. A little milk poured down the throat, or egg beaten up in milk, will be best. The acute stage will not last long; twenty-four to thirty-six hours will decide it one way or the other.

POCHARD (*see* "Waterfowl, Ornamental").

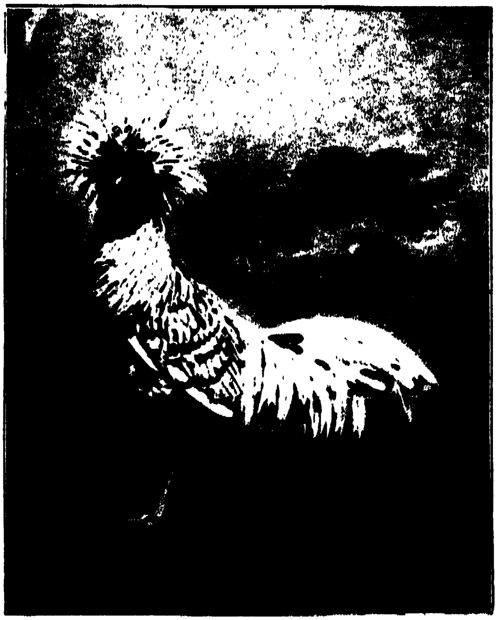
POISONING. Poultry-keepers often complain that birds have been poisoned, when they are dying off rapidly after being taken ill, perhaps only a few hours previously. No doubt in many cases it is a perfectly true assumption, but not always. The first thing to do in order to determine what is the truth is to open the crop of one and see what it contains, and if it is full of some particular kind of berry, steps should be taken to prevent the birds getting more, and an antidote should be given. In some cases, however, there is no poisoning at all, but merely indigestion or liver complaint, as a result, perhaps, of sour food.

How is it possible to distinguish a true case of poisoning from a case of, say, liver disease? The poisoning case, as a rule, would be much more rapid in its development than would a case of disease. This, taken in conjunction with other symptoms, as, for instance, screwing up of the muscles, which is characteristic of strychnine poisoning, or diarrhœa, which might follow lead poisoning (as, for instance, by eating white lead when painters have been employed about the premises), will generally afford a clue to what is the real trouble.

Next, what is to be done in the case of poisoning? The best thing to do is, first of all, wash out the crop by pouring warm water down into it by the aid of a small jug with a narrow spout, and then gently squeeze it out, and so get rid of whatever there may be left there. Then give a strong dose of castor oil to carry off any poison that may have got further on, and at the same time give a stimulant of brandy or port wine. If the particular kind of poison is known, then, of course, a suitable antidote should be given, which any chemist will supply. Failing a chemist or other scientific adviser, give white of egg and olive oil for all mineral poisons.

POLISH. The Polish is not one of the best-known, but it is undoubtedly one of the oldest breeds in existence. Many of the Crested French and other continental races owe to it some part of their character and composition. From time to time much controversy has raged around it—its origin, its name and the various members of its family. By old writers it has been confused with the breeds of somewhat similar general characteristics, but of an altogether different race. In almost every publication dealing with poultry keeping as a part of husbandry, the Polish fowl is mentioned. Some three hundred years ago the Italian naturalist, Aldrovandos, wrote about it under the name of Paduan; Darwin also took an interest in the bird because of its noticeable craniological peculiarity.

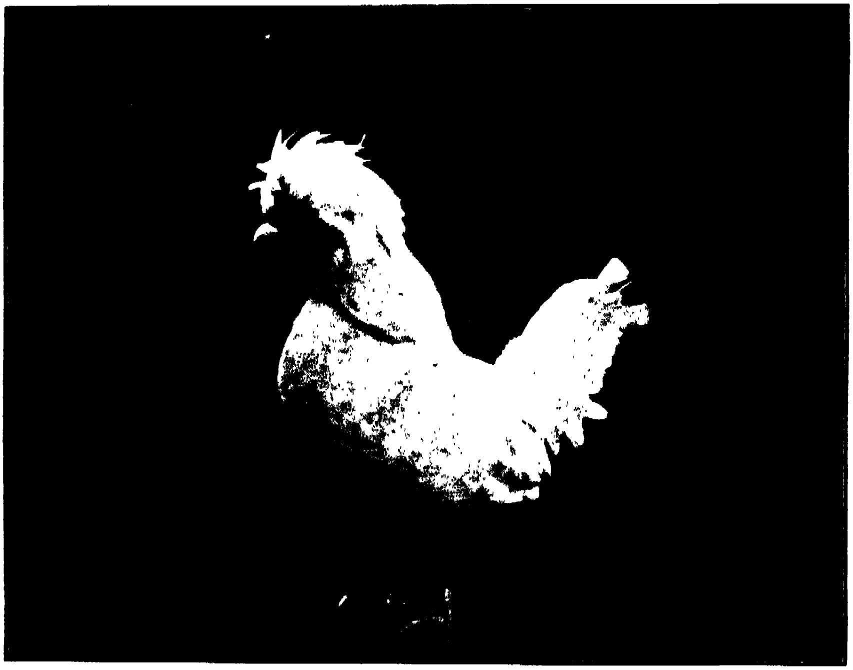
Regarding its name, the natural supposition that the breed originated in Poland, or at all events in that part of Europe, has been disputed, and an ingenious theory substituted. It has been suggested that the fowl was originally called a "poll" in reference to its conspicuous crest; that from being known as "Pole" it became known as "Polled," then as "Poland," and eventually as Polish. The writer does not subscribe to the probability of this view. In Austria he has seen innumerable farmyard fowls crested and of Polish character, though naturally much smaller than the



Silver-laced Polish.

exhibition specimens we are used to in England. The crest is a decided characteristic of the fowls of Austria, Russia and neighbouring states; what more natural than that it should have found its way across the borders of Poland when that country was a powerful commercial state?

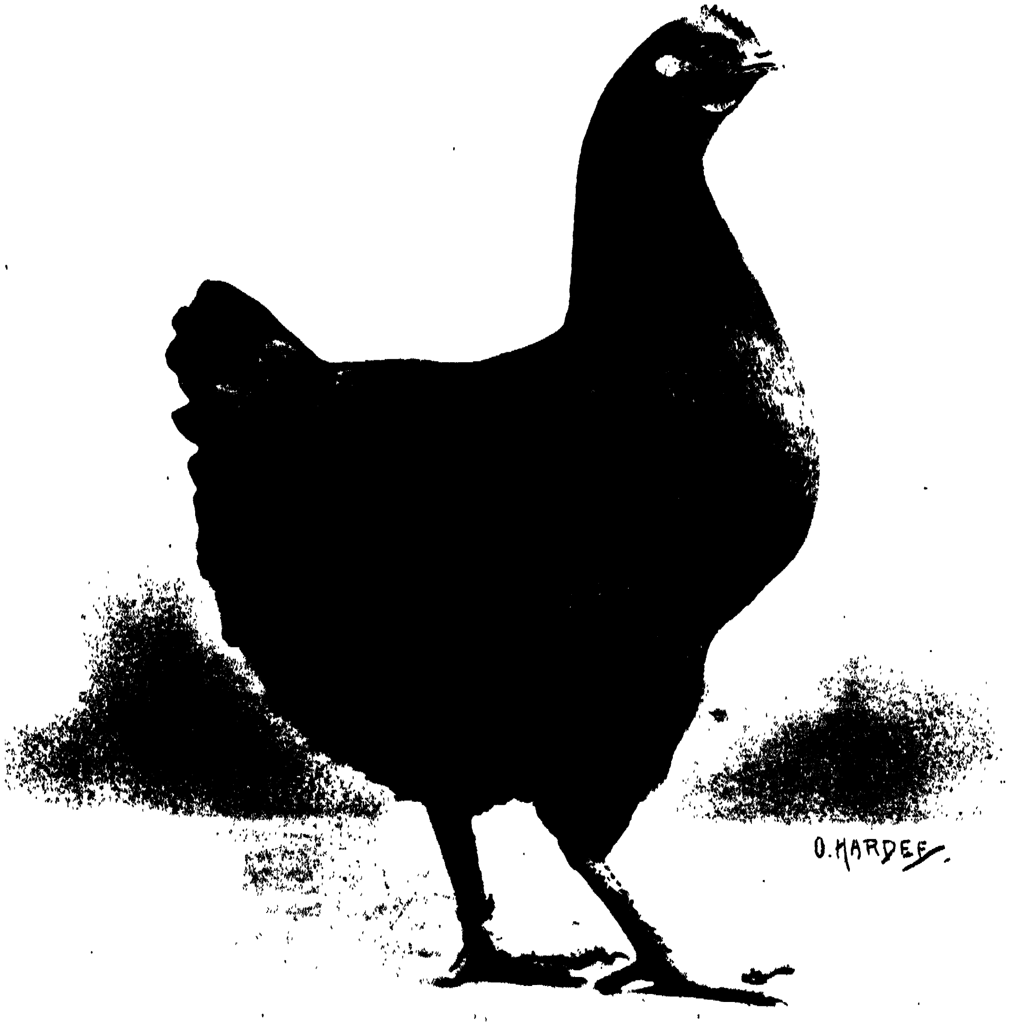
Whatever be the origin of the name or the breed, there can be no doubt that many other domesticated races owe a great deal to it. The Houdan, for instance, shows in its crest and muffling the influence of Polish ancestors; and not in the Houdan alone, but in the Crêve Cœur and the La Flèche of the French group, we see in more or less degree Polish characteristics transmitted. Indeed the Polish fowl may be regarded as the parent of the French races—as responsible in great part for the remarkable flesh qualities of those races. Despite this, however, the breed cannot be described as economically valuable. Under lenient conditions the hens have certainly proved themselves good layers of white-shelled eggs, but not so good as to compare with non-sitting races. The flesh is white and of decent quality, fairly plentiful on breast. By no stretch of the imagination can the Polish be described as hardy, nor are the chickens easy to rear. In this country fresh blood is scarce and it is probable that inter-breeding has done some harm. Anyway the fowls cannot be recommended to the practical producer—for his purposes there are many better kinds.



White Polish.

As an exhibition breed of some character and beauty the Polish at one time enjoyed quite considerable popularity. Nowadays it is kept by a few, but none the less turns up regularly in the A.O.V. classes at the International and, occasionally, at other shows. The crest and general characteristics are not such as find favour with English fanciers. It should be noted here that the crest is not so much the remarkable feature of the breed as is the skull it surmounts. Nevertheless a very intimate connection exists between the crest and the skull, inasmuch as at a very early age the chickens that will have the best crests can be distinguished by the size of the

PLATE No. 80



Buff Plymouth Rock Hen.

(*The property of Mrs. Wilkinson, Burrow House, Scotforth, Lancaster.*)

Winner of 1st and Challenge Cup Crystal Palace; 1st and Challenge Cup, Buff Plymouth Rock Club Show, Bristol; 1st and Special Morecambe; 1st and Special Kendal; only times shown, was never beaten.

extraordinary protuberance on top of the skull. In this protuberance are skin-covered apertures, the size of which varies according to that of the crest. So far as is known, only one other breed possesses a similar peculiarity—a continental race known as the Crested Dutch.

The Polish is a bird of good size, the cocks weighing about six-and-a-half pounds and the hen five pounds. The body is long and broad, the back flat and the breast prominent and round. The tail is well-furnished and in the case of the hen carried rather low. The feathering and frontal development of the bird make it appear larger than is actually the case. In competition the crest is the most important point bar the colour. It should be as large as possible, circular, and in the cock composed of long "hackle" feathers standing straight up and falling away on each side; the crest of the hen is close and globular. There is a "muff," but no wattles. The comb consists of two small horns in front of and beneath the crest. The ear lobes are small and bluish-white in colour; the legs are slate-blue.

There are several varieties of the Polish, including a Gold-laced, a Silver-laced, White, Chamois, Buff and Blue. All of these are remarkably handsome, but only the two first-named are shown to any extent in this country. In marking they are similar to the more frequently seen Gold and Silver Wyandottes. Of the remainder only the Chamois—in which a beautiful and unusual combination of colours is seen—need be described. Here the ground-colour is buff, with uniform white edging of each feather. Such marking is very difficult to obtain, but even imperfect specimens form a study in fowl beauty that would be very difficult to surpass. The variety is said to be the result of crossing the Gold-laced and the White together.

POLLARDS (*see* "Feeding Stuffs").

POST-MORTEM EXAMINATION, HOW TO MAKE. The following procedure is recommended for those who desire to make a post-mortem examination of a fowl.*

Place the bird on a board, and carefully and critically examine its outward appearance. Is the weight normal? Examine the breast muscles. If they are shrunken, so that the breastbone is readily felt, it indicates poor condition and often the presence of a chronic disease.

The normal appearance of the comb, wattles and eyes varies with the breed. Note if they are normal; they should be only slightly lighter in colour than during life. If small, light-yellow, raised spots (circular or irregular in outline, and covered with a thick, grey-yellow crust) are present on the comb, wattles and one side of the head, the disease is likely to be "favus," or white comb, due to the presence of a parasitic fungus. The commonest disease with lesions on the wattles, around beak, on the eyelids and eye, is that known popularly as roup, canker or sore head—terms which undoubtedly describe progressive changes of the same disease. The disease is characterized by, first, mucous discharges, accompanied by inflammation, and later by the presence of cheesy-like masses and wart-like tumours. Discoloration of the head in turkeys is an indication of the disease known as "blackhead," but confirmation of such an opinion is necessary by an examination of the liver of the suspected bird.

Examine the nostrils, mouth, tongue and pharynx of the bird; these organs should be free from yellowish patches or wart-like growths. If these are present the disease is in all probability roup.

Push aside the feathers at various parts of the body, and examine for parasites, which live upon the external surface of the body. There are thirty or forty species of these affecting various birds, and while they may at times cause death, their presence is an indication of unsanitary conditions. They interfere with the vitality of the bird by sucking the blood, gnawing the skin, and interfering with sleep, and thus favouring the attack of an infective agent.

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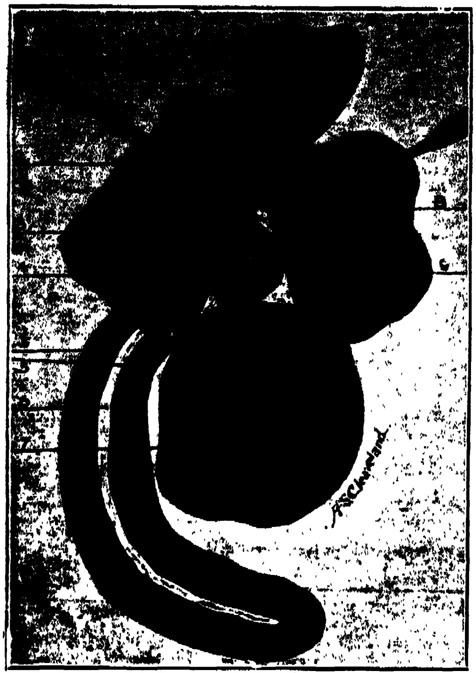
* *Reliable Poultry Journal* (U.S.A.).

Examine the feathers around the cloaca. If they are soiled and glued together, it is an indication of an intestinal disorder. This condition is the most noticeable external sign of white diarrhœa of incubator chicks, and the various forms of fowl cholera in adult birds.



American Poultry Journal.

Liver Separated to show Gall Bladder, Spleen and Stomach.

1 Heart. 2 Liver. 3 Spleen. 4 Gall Bladder. 5 5 Duodenum. 6 Pancreas. 7 Gizzard. 8 Liver. 9 Stomach.

Examine the legs. They should be smooth, the scales well defined, and as a rule lustrous. Thickening of the skin on the under surface of the feet is often seen and is the result of irritation, often caused by too narrow perches, which compel the bird to grasp too tightly in order to maintain its position. Such a condition is equivalent to corns in man. The affection known as " bumble-foot " is an aggravation of the above-described condition, and is often accompanied by abscesses.

Tuberculosis and several other diseases are often accompanied by skin lesions, but the most characteristic appearances are found in the internal organs, and will be subsequently described.

This completes the exterior examination of the bird, and the next step is to open it, so as to reveal the organs in their natural positions.

Pluck the feathers from the front part of the breast to the junction of the neck with the body, and with a sharp knife cut through the skin and muscles to the bone ; carefully avoid the cutting of the crop. Then cut through or break the bone arch (the caracoid), situated immediately in front of the breastbone ; for this purpose a pair of bone-cutting forceps are most convenient, but in the absence of these the bones may be cut through with a knife or a strong pair of scissors. The point of the breast is now free. Then insert two fingers of the left hand beneath the breastbone, grasp the neck of the bird with the right hand, and with a strong and firm pull draw the left hand back, and the breast is torn completely away, exposing the interior of the bird, without displacing the relative position of the organs.

Without moving any parts, note the appearance and size of the various organs exposed to view. The liver, from the colour and size, will be the most conspicuous organ first seen, and we shall begin by examining it. The liver of the fowl is large, of firm consistency, and is divided into two lobes ; the left lobe covers a part of the first loop of the intestines and pancreas, and part of the small intestine, and the right lobe covers the true stomach (proventriculus), and part of the gizzard or muscle stomach, and the apex of the heart is between the upper end of these two lobes. It will be seen that the liver is moulded, as it were, on these parts, and presents corresponding depressions where it comes in contact with them. The liver probably is the organ in which we find most disease, and it should be carefully examined. If the liver is soft, so that the substance of it breaks down easily under slight pressure, and if this condition is accompanied by a mottled, greyish appearance, the bird has fatty degeneration, a condition brought about by overfeeding and the lack of exercise. This trouble is quite frequent in show birds, and manifests itself shortly after they are taken off the bench, when the fancier wishes to bring them back to ordinary condition. Fatty congestion is often accompanied by the rupture of a blood-vessel and sudden death.

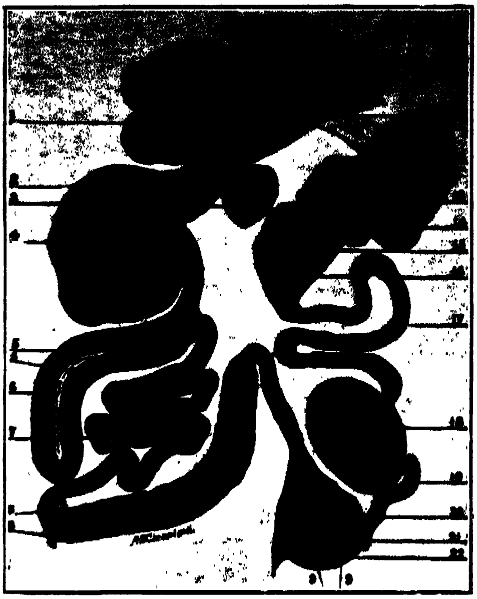
The famous *paté-de-foie-gras* is made from the livers of geese, which have been overfed and under-exercised until their livers undergo this fatty change. They are then killed, and the paste or *paté* is made from the diseased liver.

A liver affected with tuberculosis is usually much enlarged, the increase of size depending on the amount of disease present. Accompanying the enlargement are numerous white to yellow nodules, varying in size from that of a pin's head to an inch or more in diameter. If any of these nodules are opened, the contents will be found of a cheesy consistency. Poultrymen often refer to this disease as "spotted liver" or "liver complaint."

The liver of turkeys affected with "blackhead" is enlarged and darkened and scattered over the surface are round spots, sometimes white and sometimes yellow. They are often depressed or sunken in the middle, the outside ring dark and the inner portion white in colour.

Wasting of the liver is sometimes seen. In this case the organ is small and shrunken, often yellowish in colour. This disease is due to improper feeding.

If we lift up the right lobe of the liver, we shall note, in a shallow depression, the gall bladder. This is green in colour, and contains the bile, and is sometimes the seat of disease. The bile should be fluid. Too large a secretion of bile often distends the bladder, and colours the surrounding organs green. Should the duct which connects the bladder and intestines become inflamed or plugged up, the bile is absorbed by the blood-vessels and causes a yellowing of the tissues and flesh. This condition is known as jaundice. A small, oval, dark-red body situated just beneath the liver is the spleen. In birds suffering with tuberculosis it presents somewhat the same features as are described under tubercular liver.



American Poultry Journal.

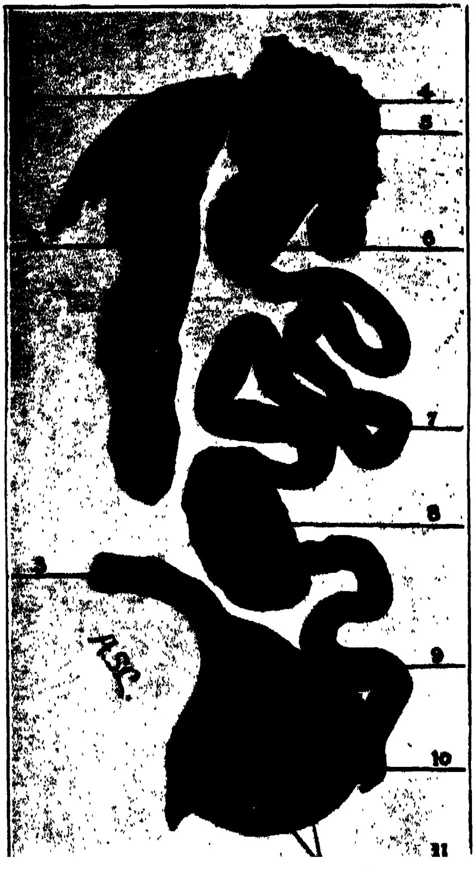
Organs and Ovary of Hen.

1 Liver. 2 Gall Bladder. 3 Spleen. 4 Gizzard. 5 5 Duodenum.
6 Pancreas. 7 Intestines. 8 8 Free Extremities of Cœca.
9 9 Opening of Ureters. 10 Heart. 11 Stomach. 12 Lung.
13 Ovary. 14 Egg entering Oviduct. 16 Infundibulum.
17 Oviduct. 18 Egg passing through Oviduct. 19 Oviduct.
20 Cloaca. 21 Opening from Oviduct. 22 Margin of Anus.

The heart is not often diseased; occasionally we find it ruptured, and the body cavity filled with clotted blood.

Attention should be directed next to the lungs. These are situated just above the heart, and are easily recognised by their bright red colour and spongy consistency. The lungs in birds are attached to the inner side of the walls of the chest.

The commonest affection of the lungs is congestion or inflammation. This is easily recognised by parts of the lungs being dark in colour and solidified. If such pieces are cut out and thrown into a glass of water, they will sink. Healthy lung-tissue always floats.



Poultry Journal.

Organs of the Female Bird.

1 Suprarenal Capsule. 2 Kidney. 3 Rectum. 4 Ovary. 5 Egg. 6 Infundibular End of Oviduct Tube grasping a ripe egg as it falls from the ovary. 7 Oviduct. 8 Uterus. 9 Oviduct. 10 Exit Opening of Oviduct. 11 Outlet of Uterus.

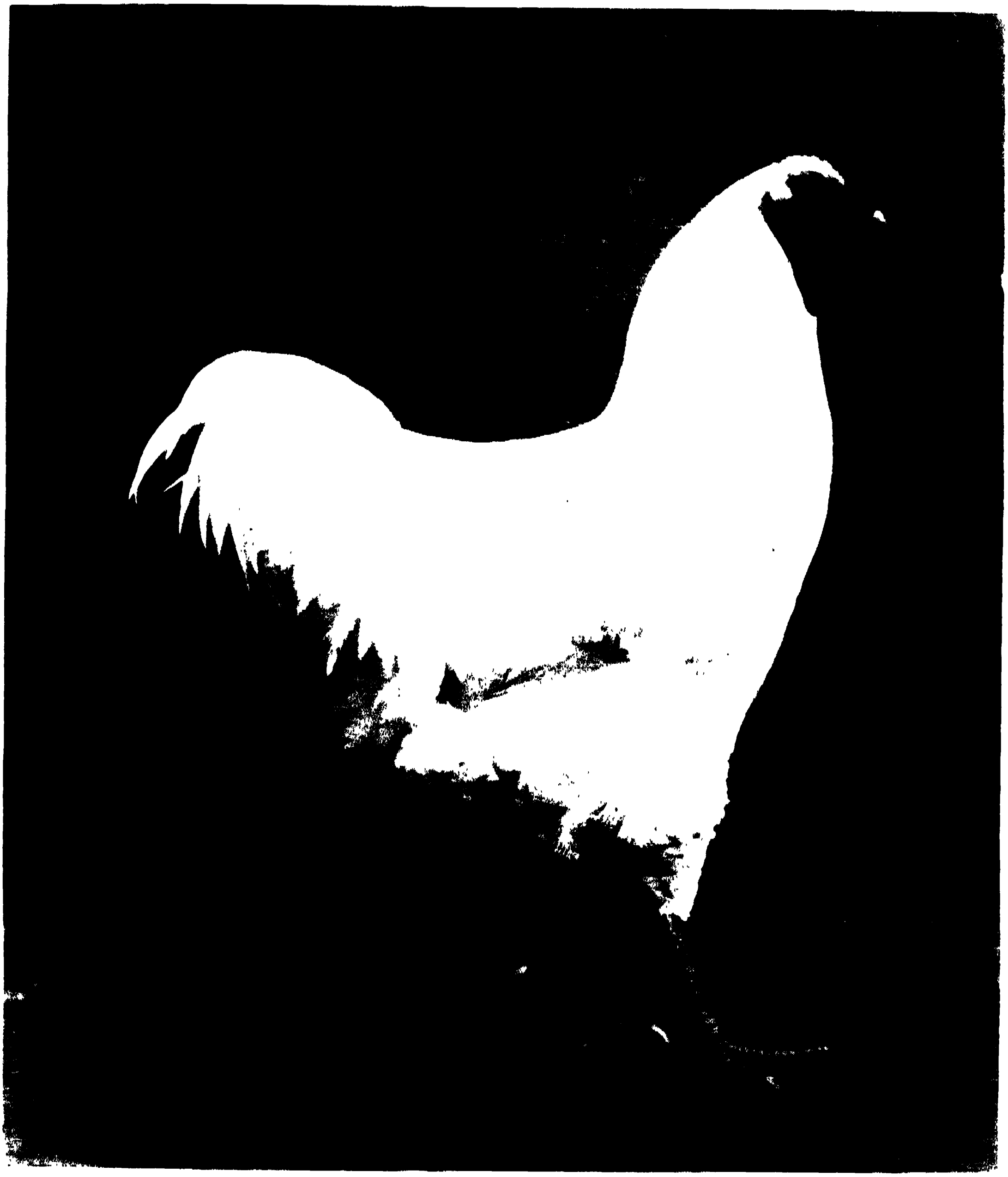
The digestive organs next claim our notice. It is better to examine these throughout their entire length. Begin with the gullet and follow it to the crop, in which the food is softened. The walls of the crop are thin and muscular. The two commonest manifestations of disease are (a) inflammation : In this condition the crop is much distended, and the contents very liquid and gassy and of an offensive odour. (b) Paralysis : In this state the muscular walls are so stretched that their tone is lost or paralysed, and in consequence the food cannot be emptied. The crop in this disease is usually very large, and packed solid with food.

Leaving the crop, follow the tube in the direction of the gizzard ; just before this organ there is a wider portion, known as the true stomach or proventriculus. The food from the crop passes into this in small quantities, and becomes mixed with the gastric juice secreted by glands in the walls of the true stomach. This juice aids in the digestion of the albuminoids of the food, but the grinding action of the gizzard is necessary to crush and macerate the seeds which are the food of so many birds. The true stomach is often the seat of inflammation, which can be recognised by the thickening of the walls and the collection of much mucus on the inner walls.

From the proventriculus, pass on and examine the gizzard. It will be necessary to cut the skin over the surface of the intestines at this stage, and the gizzard may then be pulled out and examined. The gizzard has been very properly called the " muscular stomach," and if you take a knife and cut it in two, the thick, fleshy, muscular walls, of a dark-red colour, will be observed, and lining it the horny internal wall, of a greenish-yellow colour, with numerous shallow folds. The grain and seed eaten are here ground up by the action of the muscles, aided by the grit and gravel which is mixed with the food.

The gizzard does not often show indications of disease. Occasionally we

PLATE No. 81



White Plymouth Rock Cock.

(*The property of Mr. W. L. Horbury, Elm House, Bromborough, Cheshire.*)

Winner of 1st Club Show at Leeds, also 2nd in the White or Buff Class York.

find a pin or tack penetrating the hard interior lining into the muscular tissue, with discoloration and death of the surrounding tissue. In birds poisoned with phosphorus from eating rat-poison and matches, it usually shows some slight inflammation. If the contents of the gizzard are smelled, the odour of the phosphorus can be noticed.

Leaving the gizzard, we follow the intestine throughout its length. The first loop of the small intestine surrounds the pancreas, a narrow elongated organ, pinkish in colour and firm, with a granulated surface; certain ducts from this gland pour the pancreatic juice, which emulsifies the fat of the food, into the small intestine. The small intestines are quite long, and continue until we reach a portion where we meet with two blind ends. This point marks the beginning of the large intestine, and it ends at the orifice, called the cloaca. The two blind tubes called the cæca also open into the cloaca.

The intestines vary in colour and appearance throughout their length. They are pinkish-white, and, when carefully inspected, numerous fine blood-vessels will be noticed all over their exterior surface. The cæca are greenish-white in colour, the blind ends as a rule darker than the portion near the cloaca.

No portion of the bird, or no organ, excepting, perhaps, the liver, is more prone to be affected than the intestines. All intestinal troubles, like catarrh, diarrhœa, cholera, enteritis, etc., produce more or less profound changes in the appearances of the intestinal tract, the most significant of these being the reddening of the intestine and dilation of the blood-vessels.

In the disease of turkeys already mentioned (blackhead), the cæca are the principal seat of the disease. The walls become greatly thickened, and the canal fills with a yellowish-white mass, built up of layers of blood and cells. Sores with crusts also form on the walls.

The contents of the intestines should be examined for the presence of worms, as both wireworms and tapeworms attack poultry.

We have now lifted out of the body cavity the bulk of its contents; there remains, however, at the very bottom, the kidneys. These may be recognised as flattened, elongated bodies, fitting closely into the hollows of the pelvis. They commence immediately below the lungs, and extend along the sides of the spine as far as the rectum. Their texture is rather frail, rapidly yielding under the pressure of the finger, to which they give a granular sensation. The secretion from the kidneys is not fluid as in mammals, but it is a white, semi-fluid mass, which soon hardens, sometimes causing obstruction of the cloaca. This is noticeable in the white diarrhœa disease of incubator chicks. Too much animal food may produce the same trouble in pullets.

In male birds the testes are two in number, oval in shape, and whitish in colour. They are situated near the upper extremities of the kidneys. They vary in size with the season of the year, becoming large during the breeding season. They connect by two tubes, which lie close to the ureters, with a small opening on the projection of the wall of the cloaca.

In the female, the ovary and oviduct on the right side are entirely lacking, or are so reduced as to be hardly noticeable, but the organs on the left side are very large and well developed, especially during the breeding season. The ovary is situated in the abdominal cavity near the lumbar vertebræ. It consists of a grape-like mass or cluster, composed of a large number of ovules in various stages of development, some very young, small and white, others older, of considerable size, and yellow in colour. From the ovary a long tube conducts the egg to a small but dilatable opening in the cloaca. This tube, called the oviduct, is rather long, of wide diameter, dilatable and flexuous, and only exists in the state here described during the breeding season; at other times it is much smaller and shrunken. The oviduct has three well-marked regions, *viz.* :—

(1) The wide open mouth at the top near the ovary. (2) The twisted or coiled glandular part, which secretes from the glands of its folded mucous membrane the albumen or white of the egg, which is added in layers on the yolk. (3) A short, wide portion, which produces the egg-shell and which opens into the cloaca. The commonest disease of the ovary is gangrene, easily recognised by the brown or discoloured ova, accompanied by putrefaction. Tumours are often found, and look like the yolk of a hard-boiled egg. The oviduct may also become gangrenous, and the tissues decompose and putrefy, and the eggs escape into the abdominal cavity.

POULARDES. A pullet in which the reproductive powers have been destroyed.

POULT. A young turkey.

POULTRY CLUB, THE. This governing body of the poultry world was founded in 1877, with the view of endeavouring to raise the tone of the fancy from the low level it had sunk to. Owing to flagrant and glaring malpractices that had been carried on, especially in connection with the exhibiting of fowls for a very considerable time, the Poultry Club was started with three definite objects, the first being "The promotion of the breeding and exhibition of poultry;" the second "The suppression of fraud and dishonourable conduct;" and the third being "The advancement and protection of the interests of poultry-breeders and exhibitors;" and the attainment of these three primary objects have been, and are still, the fundamental principles for which the Poultry Club was formed. At the Crystal Palace show, of 1877, a meeting was held to discuss the advisability of forming a club, when the Hon. and Rev. F. G. Dutton presided. After a lengthy discussion the meeting was adjourned to December 3rd, at Birmingham. The result of this meeting was that a committee was appointed to draw up a code of rules. This committee consisted of the Hon. and Rev. F. G. Dutton, the Hon. A. Baillie Hamilton, Rev. W. Serjeantson, Rev. Hans F. Hamilton, Messrs. T. C. Burnell, R. A. Boissier, O. E. Cresswell, A. E. W. Darby, J. Hinton, R. E. Horsfall, S. Matthew, J. E. Manby, E. Prichard, C. Sidgwick and R. B. Wood. The code of rules agreed on is given in detail in "The Journal of Horticulture" of the 20th December, 1877. These primary rules were the real foundation of the existing ones and in two or three cases they are practically word for word. The annual subscription for members was fixed at a guinea and for associates 5/-. The above-mentioned committee carried on the preliminary work until March 1st, 1878, when the election of officers took place, the Hon. and Rev. F. G. Dutton being elected president; the Hon. A. Baillie Hamilton, vice-president; and Mr. O. E. Cresswell, hon. secretary and treasurer. One hundred and twenty-five members were elected. Thus the actual launching of the Poultry Club in its mission of reformation may be said to date from this meeting, though it had been in embryo for some few months previously. The first meeting of the formally-constituted committee was held at the Charing Cross Hotel on the following 14th May. Rules were drawn up for the management of shows, and the committees of shows were invited "to hold their shows under the patronage of the Poultry Club." The general meeting of 1879 was held at Birmingham, when an important resolution was passed, which was that financial support should be given to shows held under Poultry Club rules, the outcome of this resolution being that six classes, with substantial prize money, were guaranteed at Shrewsbury and Wolverhampton Shows. The working of the Club appears to have been carried out on the most economical lines, for the statement of accounts for the year 1879 shows a credit balance of £129 12s. 6d. At the August meeting of 1880 the question of preparing a standard of excellence was discussed, but the matter seems to have been postponed for a time. At this meeting the hon. secretary, Mr. O. E. Cresswell, intimated that he wished to be relieved of his office at the end of the year.

The next meeting was held at the Crystal Palace Show, on November 15th, when Messrs. Lewis Wright, Teebay, Dixon and Tegetmeier were elected hon. life members.

Mr. Alex. Comyns was elected hon. secretary in January, 1881. At the next committee meeting, on February 24th, it was suggested that circulars be sent to secretaries of shows, requesting them to furnish dates on which it was intended to hold their respective shows during the ensuing year, with the view to avoid clashing as much as possible. At the next monthly meeting the committee recorded "its strong condemnation of the practice of owners being permitted by poultry show committees to bid for, and to buy in, their own exhibits—a proceeding in itself illegal." Messrs. Arms, Boissier, Comyns, Fraser and Lucas were appointed a sub-committee for collecting the necessary data for the preparation of the standards of perfection. The committee at their next meeting resolved "that a club library should be formed, and that Mr. Lewis Wright's collection of poultry books should be purchased to form the nucleus of such library." In September it was resolved that the Rev. E. H. Morgan, Messrs. J. Lucas and L. C. R. Norris-Elye be constituted a sub-committee to arrange details for the holding of a club show. Subsequently it was arranged that a show be held in the New Corn Exchange, Cambridge, on January 4th and 5th, 1882.

Eighty-nine classes for poultry were arranged for, with six prizes in each, of £3 first, £2 second, £1 third, 15/- fourth, 15/- fifth and 5/- sixth, the entry fee for members being 5/- and 7/6 for non-members. Unfortunately the venture proved a failure and resulted in a heavy financial loss to the Club.

During 1883, Mr. Alex. Comyns was appointed editor of the Standards, with the Earl of Winterton, Messrs. S. W. Adams, G. B. C. Breeze, R. A. Boissier, O. E. Cresswell, J. Lucas and L. Norris as an editing committee. In 1884 the annual subscription was reduced from one guinea to 10/-, whilst the associates' fee was raised to 10/-, so as to have a uniform subscription. The following year at the general meeting it was proposed and carried "That cockerels and pullets, respectively, shall, unless the contrary be stated in the schedule, be taken to mean birds hatched on and after January 1st, in the current year."

At the election of officers for 1887, Mr. R. A. Boissier was returned as president, which office he held until 1893, and it was during the first year of his presidency that the first complete edition of the Standards of Perfection was issued.

Early in 1889 it was decided to hold a second club show, and the site selected was in the Zoological Gardens, Regent's Park, London. The Show opened on September 11th, and continued till the 13th, and though there were 1,391 entries a heavy financial loss was incurred, which greatly crippled the resources of the Club for a considerable time. In November of this year club medals were instituted as specials. The following year the Club suffered a great loss by the lamented death, on November 9th, of its hon. secretary, Mr. Alex. Comyns, who had done so much work for the benefit of the Club, by putting his whole energy into its advancement. At the subsequent general meeting Colonel A. Ridgway was appointed to succeed Mr. Comyns as hon. secretary, an office that he unfortunately held for only a few months, as he died on July 5th following.

Mr. J. Horn and Mr. H. Wallis kindly undertook to carry on the secretarial duties jointly until the next general meeting, when Mr. R. T. Thornton was elected hon. secretary. When Mr. Thornton took up his duties in 1892, there were only forty paying members on the books and the total income for the preceding year amounted to only £25 9s. 5d.

The new secretary's energy soon made itself felt, for within the year the membership had increased to 143, the total income rising to £72, with an available balance of £31 2s. 8d. carried forward. At the election of officers for 1893 Mr. L. C. R. Norris-Elye was returned as president, an office he held until 1901. Mr. J. P. W. Marx was elected hon. treasurer, a position he ably filled for thirteen years.

During 1896 a re-issue of the Standards of Perfection was decided on, Mr. T. Threlford being appointed acting editor.

In 1898, the club lost an ardent supporter by the death of Mr. R. A. Boissier, a former president, who had been officially connected with the Club from its foundation. During this year Mr. A. A. Gatty kindly presented the Club with back numbers of the poultry journals, which extended over a period of several years.

Three important events in the Club's history occurred during 1900; the most important being the reduction of the annual subscription to a minimum one of 5/-, the institution of two thirty-guinea challenge trophies and the holding of a club show limited to members' competition at the Lambeth Baths, London, on December 12th and 13th, when there were 971 entries.

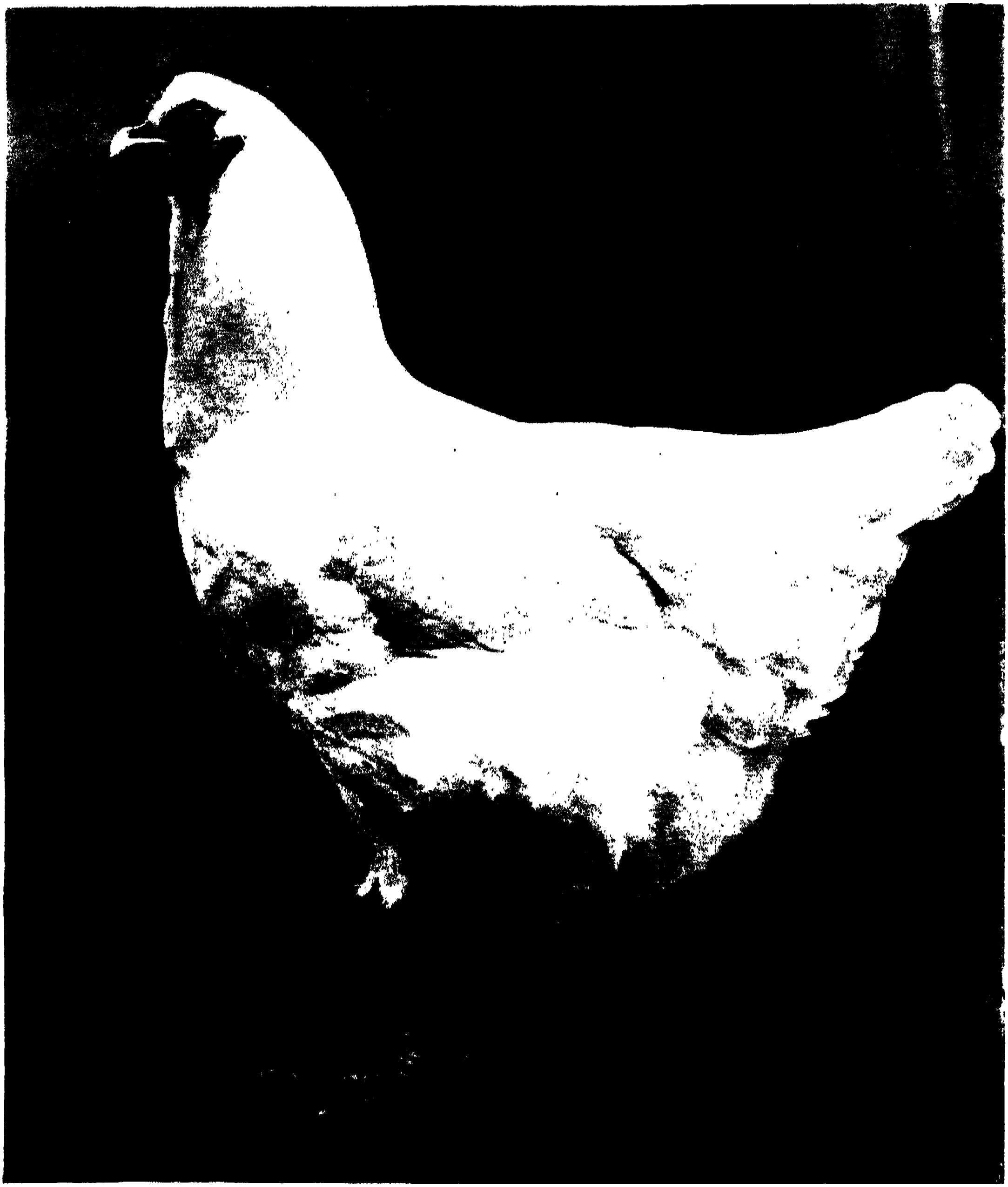
During the presidency of Mr. R. T. Thornton, in 1904, a petition to the railway companies was got up, asking for greater facilities for fanciers, in the transit of exhibits, cheap fares, etc., the Pigeon Club and the National Homing Union joining the Poultry Club in the organizing of the petition. Though 46,596 signatures were obtained and the petition personally presented by representatives of the three clubs, the Railway Clearing House authorities refused to grant the concessions asked for—so that all the expenditure of time and trouble of the joint committee met with barren results.

The principal event of 1905 was the scheme proposed for re-organizing the constitution of the Club, by what is termed a redistribution scheme, whereby the whole area of the United Kingdom has been divided into counties with sub-committees, and the transformation of the General Committee into a Central Council.

In 1906, the Club had to deplore the loss of an energetic officer, in the death of Mr. J. P. W. Marx, who had been its hon. treasurer for the long period of thirteen years. To commemorate the valuable services of Mr. Marx, the Council purchased a ten-guinea challenge cup, to be known as "The Marx Memorial Cup," for French breeds of poultry.

On the 27th of April, 1908, passed away from our midst the much respected founder of the Poultry Club, Mr. O. E. Cresswell. This title of founder of the Poultry Club can be justly attributed to him, for it was Mr. Cresswell who really conceived the idea that such an institution was much needed and would undoubtedly be of infinite service to the fancy generally. Though not taking an active part in the working of the Club during the latter years of his life, the late Mr. Cresswell laboured hard in its interests in troublesome times and finally he had the satisfaction of knowing that his efforts had not been in vain, but that the governing body of the poultry world was firmly established and universally recognised for the objects for which it had been originally formed.

PLATE NO. 82



White Plymouth Rock Hen.

(*The property of Mr. W. L. Horbury, Elm House, Bromborough, Cheshire.*)

Winner of 1st, Challenge Cup for the best White Plymouth Rock, Cup for the best White Plymouth Rock Hen and Leeds Smithfield Gold Medal for the best Plymouth Rock at the Club Show, Leeds; also 1st York, 1st Manchester, etc.

During the thirty-one years of the Poultry Club's existence the committee (now the council) have had to deal with many vexed and difficult problems, but despite adverse criticisms the Club has always been able to hold its own, and as years have passed by its popularity has steadily increased, until now it has over 1,100 members. In the first place, a reforming body was urgently needed to cope with the many malpractices then existent—that body was constituted, and ever since its foundation the work of reformation has continued and everything has been done with the view of advancing the interests of the poultry fancy.

The advantages derived by members of the Poultry Club are: (1) The right of insuring poultry against burglary and fire, at Lloyd's, at reduced rate; (2) the right of consulting the hon. solicitor of the Club, who advises on legal matters connected with poultry, free of charge; (3) the right of competing for all such challenge cups and specials as are limited to members of the Poultry Club; (4) in the case of prizes or specials being unpaid the Poultry Club undertake to take legal action on behalf of its members, without charge to them, provided the case is first submitted for approval to the committee and the hon. solicitor. All these advantages are obtained for the annual subscription of 5/-.

POULTRY PRODUCTION.

ENGLAND. England is acknowledged to be the most favoured country in the world in its natural adaptability to the production of the best quality of live stock suitable for the food of man. It may, however, be open to question whether poultry should be included as enjoying any superior advantages in our uncertain climate and on our extremely varying soils. Indeed, it might be fairly argued that any superiority that we possess in the quality of our feathered products is due to the industry and skill of our people rather than to any natural environment. It must be admitted that all the breeds by which we set the greatest store have been derived from foreign countries widely scattered over the world, and this fact seems to point to the somewhat exotic nature of the poultry industry as it now exists in these islands. Yet the business of poultry-keeping in England is a large one. All attempts to estimate its extent are, however, little more than guess-work in the absence of official returns such as are made in many other countries, and even in Ireland. All other farm live stock has been enumerated for many years and a commencement was made by our Board of Agriculture in 1908. These returns have not yet been made public, but there is strong presumptive evidence that production of late years has largely increased, while all authorities agree that there is room for very wide extension in view of the ever-increasing population and the comparative weakness of foreign competition. There is no doubt that great advance has been made in one important direction—that of poultry-keeping on farms. A few years ago it was rare to find an instance of much serious attention being paid to the poultry, which was considered too small a matter to be worth troubling about by the farmers with occupations covering several hundred acres of land. Consequently neglect was more a rule than an exception. Stocks were left unrenovated by new blood, and hens were allowed to live too long. Sometimes they were overcrowded and were often kept in "roosts," which were not supposed to require "cleaning out," much less the application of whitewash. It is, therefore, not surprising that few eggs were laid, and that the general verdict of the farmers was that poultry did not pay. The "uses of adversity" are said to be "sweet," and certainly the depression in agriculture which existed for so many years at the end of the last century taught British farmers to pay more regard to the smaller sources of revenue, and amongst these poultry took a prominent place.

Articles appeared in the agricultural papers pointing out how money might be made by the extension of poultry-keeping on the farm as distinct from "poultry-farming," especially on the lines of egg production, and a few, here and there, followed the advice given and started a number of movable houses, each containing about forty head of some non-sitting breed, and there have been many instances in which the plan has been successful. Many books on poultry appeared and several periodicals were started. The Poultry Organization Society was founded and under its auspices co-operative societies began to be formed for the organization of collecting stations, etc. Lectures were given, and the Board of Agriculture issued large numbers of leaflets on poultry management, the treatment of diseases, marketing, etc. In a word, within the last twenty-five years there has been a great revival, both in "fancy" and utility poultry keeping. Yet with all this it may well be doubted if the industry has so far done much more than awake to a sense of its importance and possibilities, or has advanced more than a few steps towards the position which it might and ought to attain.

The demand for eggs and poultry in London and other populous centres is practically unlimited, and is certain to increase if properly catered for, which is far from being the case with the present methods of marketing and distribution. We have already stated that a beginning has been made in organization, which is excellent so far as it goes, but the field of operation in that direction is, as yet, far too limited to have much visible effect.

The commercial side of the question has not been sufficiently studied and well-meaning speakers and leaders of the organization movement are too superficial and general in their ideas of trade to make much impression on the minds of practical men. At every meeting, in secretaries' reports and leaflets the bold statement is reiterated that we import vast quantities of eggs and poultry which "we might just as well produce at home." They do not tell us how we are going to beat our foreign competitors out of the field. Are we to set about the task by merely increasing our own output? That would simply mean a reduction of prices and would not stop the foreign supplies so long as there was a margin of profit beyond the cost of transit, and further, producers would say already that present prices are barely sufficient to provide a living profit. In other words the foreigner can only be starved out by starvation prices, and that would scarcely suit the British producer. How, then, it may be asked, can it be shown that there is any possible room for an expansion of the industry, if increased production must cause prices to fall below the minimum, which would leave a margin for reasonable profit? Taking it for granted that the present system of free imports will be indefinitely continued, the markets will always be open to cheap foreign products. They are the possession of the importer as much as our own, and he will scarcely withdraw on being told that we intend to produce enough for the country's requirements without his assistance.

Then again, a large increase of home production implies the necessity for a larger consumptive demand, and this can only be stimulated by lower prices, which, under present trading conditions would rob the producer of his profit. It is not easy to see how production can be cheapened except in the direction of farmers keeping more fowls, which would get a large portion of their own living by roving the fields at will, but there remains one other means of economy which we may yet see brought into practice.

Producer and consumer must be brought nearer together, and some of the intermediate profits and incidental expenses saved. This can only be done by combination. Efficiently worked, a large saving could be effected by that means. Let us see how our present clumsy machinery operates against the producer. A farmer or poultry-keeper living right away in the country has a few couples, or, perhaps, at most a few hampers of chickens or ducks to sell. He must either deal with a local collector or "higgler," or consign them to a town salesman. In the former case he must take what is offered, and in the latter he will have to pay carriage, porterage, market dues and salesmen's commission, combined with the risk of an uncertain market. The goods are sold to a retail shopkeeper, who cannot afford to do business without a substantial margin. There is, of course, no regular scale, but we may safely conclude that the producer seldom gets much more than half the amount paid by the consumer.

Here, then, we have the answer to our question as to how poultry could be cheapened to the consumer without injury to the producer, and perhaps even to his benefit. Local co-operative societies can do what is impossible for the isolated individual, they can deal direct with the retailer or even with the consumer himself. The private hamper system of dealing direct between a farm house and a family in town is splendid in theory, but only a very few are able to overcome its many difficulties. Neither could the retailer depend on the producer for a regular supply, but the case would be very different with a well-managed depôt, which could deal direct with the shops and especially with large consuming establishments, such as hotels, etc. Even under existing circumstances the production of eggs is acknowledged to be profitable, and with regard to table fowls we have an ever-present object lesson in the great fattening establishments of Sussex and Surrey of what can be done on sound commercial lines and with an organized system of management.

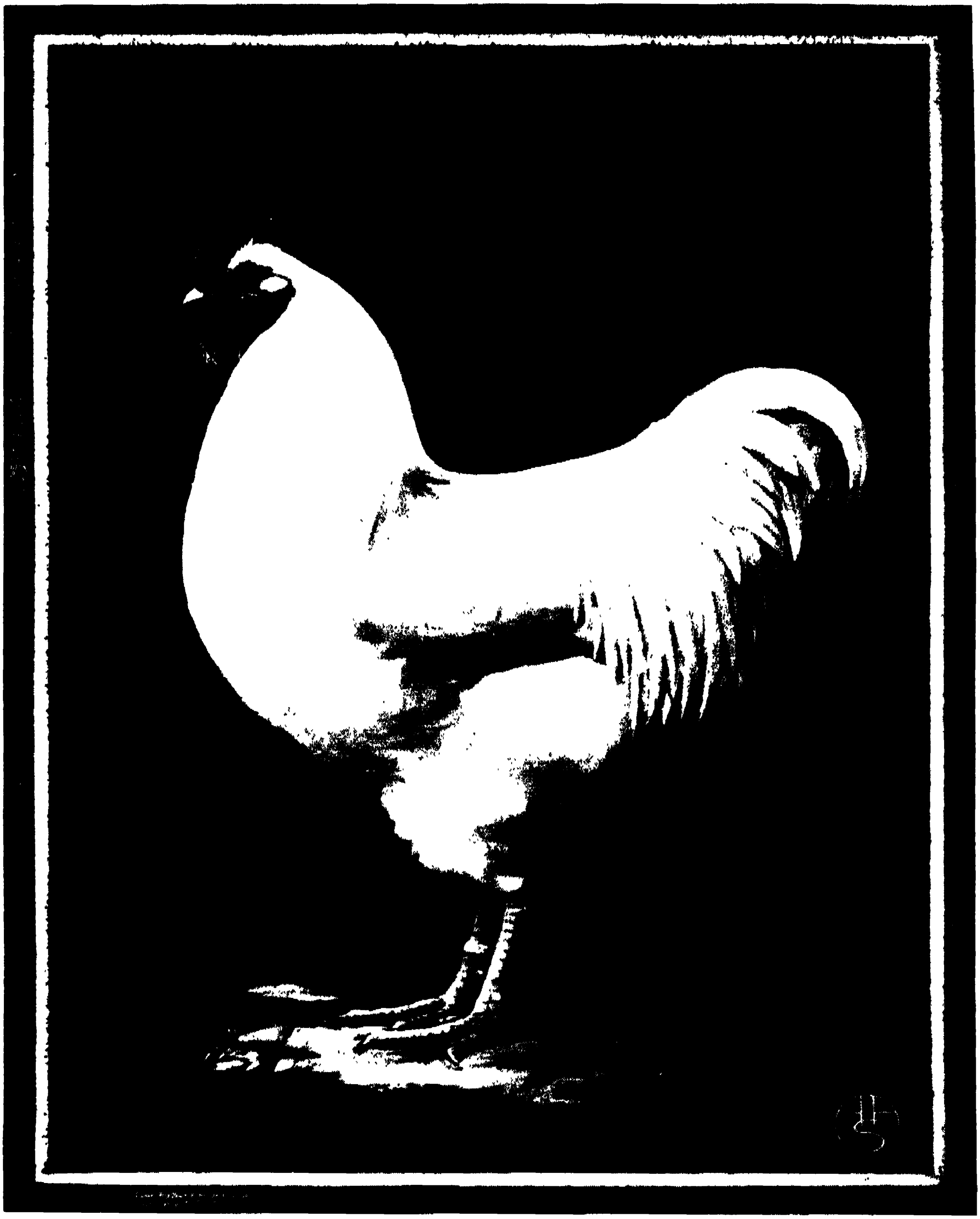
These establishments often have difficulty in procuring enough chickens suitable for feeding, and large numbers are purchased from Ireland for the purpose. The finest fat chickens from Sussex seldom realize less than 5/- each in the London markets, and moderate sized ones 3/6. A somewhat similar kind of industry is carried on in the Vale of Aylesbury in connection with ducks. Here it is a common thing for one "ducker," as he is sometimes called, to rear many thousands on one farm, beginning their hatching season before Christmas and making as much as 7/- each of ducklings at Easter. Then the goose and turkey raisers of Norfolk and Cumberland show an excellent example of successful work. One farmer, known to the present writer, occupying a large arable farm, keeps an immense number of hens scattered over his farm, and his books show an annual clear profit of £300 from this source. Thus, the proper answer to the question so frequently asked: "Will poultry-farming pay?" is "Yes, if properly managed, but, like every other business, all depends on the industry and skill of the person who undertakes it." The industry may be described as consisting of distinct sections. First, we have the fanciers, a class to which the country is deeply indebted for the wonderful improvement in both the beauty and utility of the older breeds and the evolution of new ones, many of which have proved of great value. These men have to look for their reward for years of patient experiment by the sale of specimens at very high figures, as do also breeders for exhibition. Then, there may be said to be three different classes of utility poultry-keepers, besides those who make a speciality of ducks, geese and turkeys. Those who prefer a general purpose breed, that is, one that is good for the table as well as being fair egg producers, usually keep Langshans, Orpingtons, Plymouth Rocks, Wyandottes, Brahmas or Cochins. Those who make eggs their chief consideration take Leghorns, Minorcas, Redcaps, Scotch Greys, etc., while those who breed specially for the table use Dorkings, Indian Game, some of the French varieties, etc., or crosses of these with other breeds. As regards distribution of breeds over the country it is impossible to localize them. It is not a question of locality at all, but of soil and situation. As a general rule it may be said that the best table fowls are the most delicate, or, at any rate, the most susceptible to the influence of soil and climate. For instance, the Dorking is found to require a dry and porous soil and will not thrive on a cold retentive clay, yet it does well in the North of Scotland, where the soil is suitable, as well, indeed, as on the hills of Surrey and Sussex, where vast numbers are kept for supplying the London market and for crossing with other breeds for that purpose. On the other hand, the Leghorn, one of the very best layers and non-sitters, is perfectly hardy and seems perfectly at home anywhere.

As already stated ducks are very largely kept in Buckinghamshire, Norfolk and Cumberland, where their production is a regular business, but they are kept, more or less, all over the country. Ponds or streams of water are by no means indispensable to duck keeping and the best market produce are said to be those that have never had a swim. The great home of the goose is found in East Anglia. Great numbers are hatched by cottagers and small holders and sold to the feeders to finish off. The turkey is not largely reared in this country except in Norfolk. It is supposed to be difficult to rear, and to require constant attention. Those, however, who understand its requirements and are able to produce birds weighing over twenty pounds, for Christmas, make excellent prices and find it a profitable pursuit.

—— **SCOTLAND.** The poultry industry in Scotland has recently been made the subject of enquiry by a Departmental Committee appointed by the Secretary for Scotland, with special reference to the efforts of the Congested Districts Board to promote this industry in the Highlands and Islands. That such an enquiry should have been considered necessary is presumptive proof that there is room for improvement and development of the industry in North Britain, and the statement which appears at the very commencement of the report plainly points to that conclusion. "It has been proved in evidence," says the report, "to the satisfaction of the Committee, that during recent years the poultry industry has made a much greater advance in England and Ireland than it has done in Scotland." Still, some efforts have been made to improve the production of eggs and poultry, although they have been limited in scope and intermittent in character, and what has been done has been due to local and individual effort. Agricultural and Ornithological Societies have done something by giving classes in the shows of the former and special shows of poultry organized by the latter, but the benefits derived from these have chiefly been felt by those who breed fancy varieties, and the utility side of the question has been overlooked, although it is not denied that these exhibitions have had some effect in the improvement of local breeds. This could scarcely fail to be the case, as where there are breeders of pure strains in a district there is sure to be some infusion of fresh blood by means of male birds and sittings of eggs.

In 1900, the Aberdeen County Council, through its Technical Education Committee, organized a series of lectures which, after 1904, were continued by the North of Scotland College of Agriculture. A few other County Councils also provided lectures, but they were not systematically continued, and their influence was neither general nor lasting. Lecturers have since been sent out by three Agricultural Colleges, and special attention has been paid to the teaching of practical poultry-

PLATE No. 83



White Plymouth Rock Cock (American Type).

(*Bred and exhibited by Mr. U. R. Fishel, Fisheltown, Hope, Indiana, U.S.A.*)

A winner of many prizes.

keeping, and a number of students have taken courses which cannot fail to have some influence in spreading knowledge of the subject to others.

In other ways attempts have been made to assist farmers in bringing about improvement. For instance, the Congested Districts Board gave away sittings of hen and duck eggs, and, to some extent, this very practical form of encouragement has been annually kept up. In 1906 the same Board gave £20 to be spent in proper egg boxes by the Eday Co-operative Society. Lastly, the Scottish Agricultural Organization Society, assisted by the National Poultry Organization Society, has been engaged during the past two years in spreading information through the Northern Counties, by lectures, and the distribution of leaflets treating of poultry management, egg production, and the testing, grading, packing and marketing of eggs. At the same time, co-operative societies, whose operations include marketing of eggs and the purchase of poultry food, have been organized by the Scottish Agricultural Organization Society, at Eday, Sanday, Harray, Walls and Hoy, and Opher, in Orkney; John o' Groat's, in Caithness-shire; Skirling, in Peebles-shire; and Coigach, in Ross-shire.

In 1885 an attempt was made to enumerate the poultry of Great Britain and the figures for Scotland were: Turkeys, 60,639; geese, 35,440; ducks, 258,677; and fowls, 1,970,598; the total being 2,325,354. In 1908 the Agricultural Returns again included poultry, and when these are published the progress of the industry will, at least to some extent, be demonstrated.

The report of the Departmental Committee on the present state of the industry is by no means flattering. It is therein stated that the evidence obtained shows that the poultry industry in Scotland generally has been "much neglected," and that production is far less than it might be. A remarkable exception is furnished by the Orkneys, where considerable development has taken place, and eggs to the value of £60,000 were exported in 1908, a sum exceeding the whole rental value of the islands.

The management of the poultry on farms is generally relegated to the women members of the family, and the methods adopted are very antiquated, though there are, of course, many exceptions. The prevailing idea amongst farmers appears to be that poultry do not pay, and nothing that has been done up to the present time seems to have had any general effect in removing that impression. Many of the shortcomings of the Scotch poultry-keepers which are enumerated by the Departmental Committee have a strong family likeness to those which, a years ago, were a well-deserved reproach in England, and even now the description would apply too faithfully in many districts. We find the old story repeated of bad housing and too much confinement; keeping hens long past the profitable age; in-breeding with no change of stock birds; bad feeding; and, in short, bad management in every particular. It is stated that the eggs produced in Scotland weigh from 11½ lbs. to 16 lbs. 14 oz. the great hundred, while the imported Danish eggs weigh from 15 to 18 lbs. per great hundred, and another error consists in allowing nearly the whole of the egg production to be confined to the spring months when they are at the cheapest, a fault which is certainly by no means confined to Scotland. Thus it comes about that the demand of the Scotch markets has to be met by foreign and Irish supplies, although there is nothing in the soil or climate of the country to prevent a sufficient home production.

The conclusion of the above-mentioned report may be worth quoting here: "An extension of the poultry industry throughout Scotland is of essential importance to the national welfare of the country. The Committee, as a result of their enquiry, are convinced that it is impossible to over-estimate the importance of industrial poultry-keeping, and they regard the present as a favourable opportunity for its development in Scotland, by reason of the increasing attention being given to poultry keeping, and from the fact that it is specially suitable to the small farmers, crofters and cotters. It is of special importance on small holdings, because it requires only a small capital and brings quick and regular returns, and the work can generally be undertaken without the employment of hired labour. It will act as an inducement to the people to remain on the land and will thus check rural depopulation. There are no unfavourable conditions in Scotland, climatic or otherwise, more than affect other branches of agriculture to prevent a large increase of production similar to that which has been attained in recent times in Ireland and Denmark. The enormous demand for poultry produce, and the remunerative prices obtainable for the better quality of eggs and table poultry, with the advantage of the best markets of the world within reach, indicate that when producers are sufficiently educated to the possibilities and make use of their opportunities, the poultry industry will prove highly profitable to those who draw their livelihood from the land."

——**IRELAND.** One of the most flourishing industries in Ireland at the present time is that of poultry-keeping; there is hardly any other agricultural pursuit which yields a greater and surer profit, especially to the small farmer than the production of poultry and eggs. This condition of things is largely due to the instructions which within the past ten or twelve years have been given to the Irish peasantry by various Governmental and philanthropic bodies, in the art of raising and marketing poultry. In the Western counties, known as "the congested districts," instructions in practical poultry culture have been given by experts for the past twenty years, under the pay and supervision of the Congested Districts Board, who have employed itinerant Lecturers to visit all the poor, over-populated localities in Western Ireland, and to give instructions in modern methods of poultry keeping to the peasantry. The Board also established small breeding farms in every parish, from which the surrounding poultry-keepers could always procure sittings of eggs of pure breeds, by giving in exchange an equal number of eggs from ordinary fowls. Somewhat similar provision was made for the improvement of turkeys, ducks and geese, with the result that in the course of years a very great improvement in the poultry of this part of Ireland was effected. The great drawback seems to have been that nothing was done to teach the people how to market their poultry produce to advantage, and prices remained so low for many years that there was no great inducement to increase the production of poultry or eggs, or indeed to keep more then a few fowls about the farmyards.

In the year 1897, the problem of marketing Irish poultry produce was vigorously tackled by the Irish Agricultural Organization Society, and to this body, rather than to either of the liberally endowed Governmental Boards, is due the present enviable position which Irish produce holds in the English markets. The I.A.O.S. was the founder and tutor of these various co-operative societies, dotted here and there throughout Ireland, which have done so much to raise the standard of Irish produce and to popularize it amongst English consumers. Several thousands of pounds were expended by this society in sending experts into every corner of Ireland to expound the principles of co-operation as applicable to the raising and marketing of poultry. Under its auspices numberless lectures on this subject were delivered, demonstrations in fattening, killing, trussing, packing and marketing poultry of all kinds were given, bodies of farmers banded together in co-operative societies were instructed in modern methods of marketing eggs, and the Danish systems of collection, purchase by weight, testing for freshness, classification according to size and colour, packing in wood fibre, and in boxes of uniform size, branding, etc., were introduced into Ireland. The I.A.O.S. also conferred inestimable benefits on farmers and cottagers by giving free instructions upon every phase of poultry culture from the hatching of the egg to the marketing of the finished fowl, through the medium of its leaflets and other publications and through its expert lecturers and writers.

When the Department of Agriculture and Technical Instruction came into being in 1900, a further impetus was given to the poultry industry, for with the ample funds at its disposal this body was able at once to establish a well-organized system of instruction in every Irish county. One of its first moves was to allot to each county a qualified poultry expert, to reside in the county and devote his whole time to the interest of poultry-keepers within the area under his charge. Small breeding farms were established on somewhat similar lines to those already existing in the congested districts, at the rate of from five to ten in each county, and these farms serve not only as stations from which eggs for hatching and stock birds can be procured at moderate price, but also as model farms and demonstration centres. They are inspected frequently throughout the summer season by the county instructors, and all work on them is carried out under his or her direct instructions and supervision. The instructors are also most helpful to poultry keepers, as they deliver series of lectures in every district within their respective counties throughout the winter months, and visit farms here and there to give practical advice and demonstration upon all matters pertaining to poultry culture. In some few counties, new departures have been made within the past few years, but the systems of instruction thus briefly described are those which obtain in most Irish counties. A notable exception is Co. Antrim, where instead of several small farms, there is one central farm, from which residents of every district within the county can obtain their supplies of stock birds and eggs for hatching. Another exception is County Tyrone, where a travelling poultry farm on the caravan principle has been set up. The instructress travels about during the summer months with her stock of fowls and ducks, her incubators, rearers, coops, fattening appliances, egg testers, and various other appliances, and in this manner she reaches everybody interested in poultry, and brings her lessons in modern poultry-keeping home to their doors. In every district some benevolent farmer can be found to lend a piece of a field in which the caravan can be set up, and then the pupils come along and the work proceeds merrily from day to day.

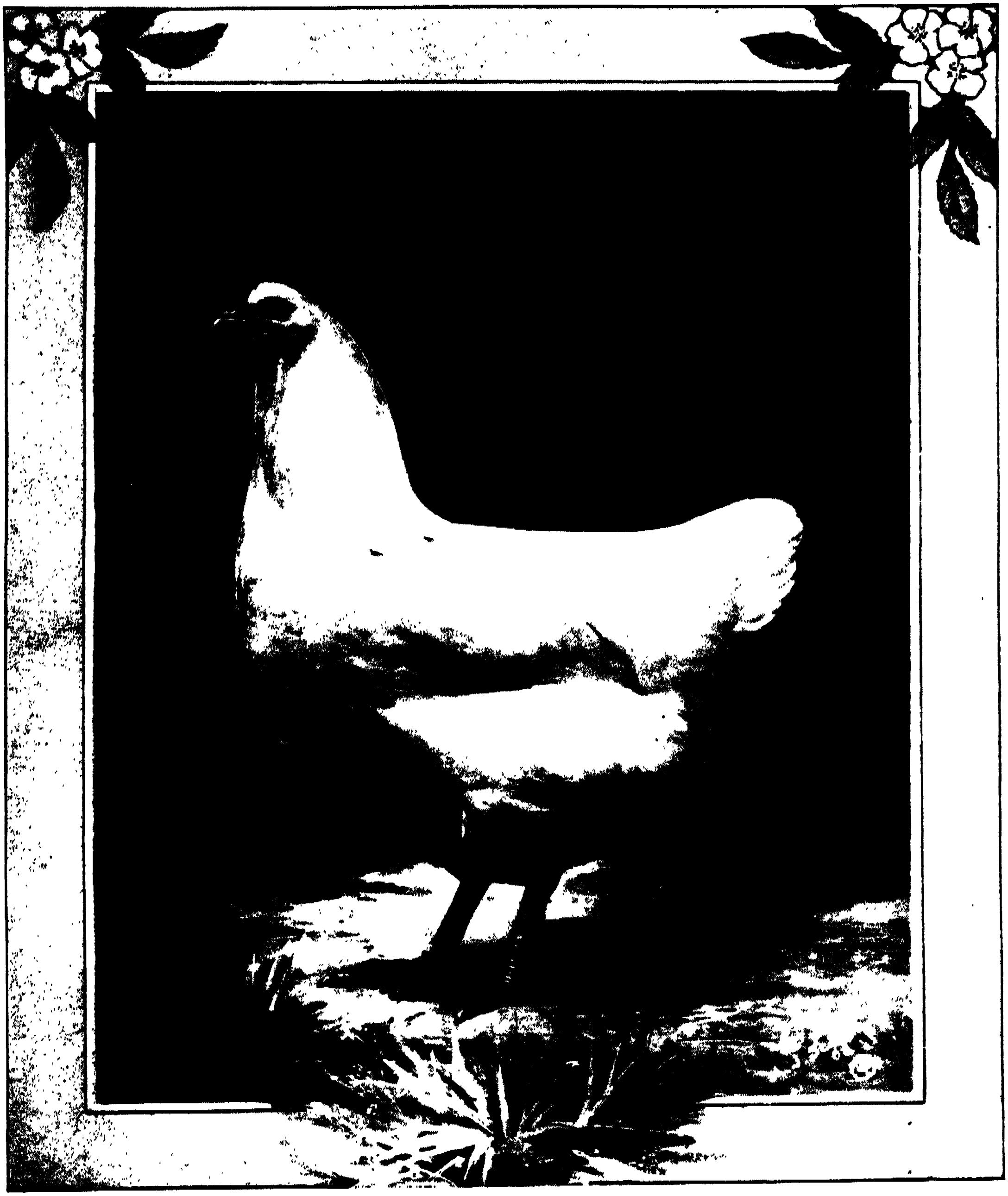
In Ireland poultry-keeping is not an industry of the farm alone, for it is not confined to the farm, but is engaged in by a much larger class of people than are found keeping fowls in most other countries. There are very few who keep poultry as a sole means of earning a living, but very many who are so far helped by raising fowls or eggs that if this source of income were withdrawn they would find it almost impossible to subsist. To this class belong cottagers, generally—artizans, labourers and women who are engaged in various indoor pursuits, such as dress-making, knitting, crochet work, etc. The numbers of poultry and eggs which are annually produced by these small people are incalculable, but it is believed that they make a much larger whole than the total numbers of eggs and poultry raised by farmers. Amongst farmers it is notable that poultry-raising is a rather despised industry in the fertile grazing plains, wherein larger stock, cattle and sheep, are looked to to pay larger profits than can be got out of the poultry industry. Similarly, poultry-keeping is not a favourite pursuit amongst dairy farmers, and investigation has shown that the finest poultry and the greatest numbers of them are raised by those who till their farms on an extensive scale for the production of corn and green crops. Others who keep poultry in Ireland are the gentry who reside on country farms and estates, and employ their stewards or gamekeepers to raise poultry on a large scale for home consumption. Amongst this class there are also a large number of "fanciers," who produce high-class birds for exhibition. Professional men and their families residing in rural districts in Ireland are also extensive poultry-keepers, and it is quite a common practice amongst the wives and daughters of Clergymen, Medical men, etc., to earn "pin money" by keeping poultry extensively, both for home use and for sale to private customers. Much of the poultry and eggs raised by people of this class is distributed through the Parcel Post.

In Connaught the land is for the most part poor, retentive of moisture, unsheltered from severe Atlantic gales, and generally speaking, less well suited to poultry-raising than any of the other provinces. Yet poultry-keeping in western Ireland is an important industry, owing to the smallness of the farms, and the needs of the peasantry to turn their hands to every branch of farming that will yield a profit. Table fowls are not largely raised here, as the odds are heavy against this branch of the industry, but the favourite pursuit is egg production. For this purpose the breeds kept are those introduced by the Congested Districts Board, namely Plymouth Rocks, Minorcas and Leghorns. These breeds have been intercrossed, with the result that throughout the whole of Connaught excellent layers are to be found. Indian Runner ducks are also kept largely and the climate and atmospheric conditions suit them admirably. The egg industry of Connaught may be said to be a really important one, and it is doubtful if the people of that province have any other pursuit which pays them so well.

Leinster is better suited to poultry-raising than any other portion of Ireland, and for this reason it is the chief centre of the table poultry industry. The farms are well sheltered, the soil is naturally well drained, and does not retain moisture on the surface; there is a comparatively large area under cultivation, and consequently corn is plentiful and inexpensive. All these things contribute to the successful raising of fowls, turkeys, ducks and geese, and several thousand pounds worth are annually consigned to England. The Sussex chicken districts draw their supplies of chickens for fattening largely from Leinster, and the breeds kept to supply this demand are crosses of Plymouth Rock, Buff Orpington, Dorking, Light Brahma and other large fowls. The turkey industry is of almost equal magnitude, and on market days at the approach of Christmas it is a common sight to see the streets of market towns blocked with cart loads of fat turkeys. These birds are usually bought up by local dealers, killed within a day or two, plucked, packed and despatched to Great Britain. In like manner geese are extensively raised and marketed at Michaelmas and Christmas. The breeds of turkeys kept are American Bronze and Black Norfolk, and of Geese, Embden and Toulouse.

Ulster is the most extensive poultry-raising province in Ireland; both its home consumption and its export trade are much larger than those of any other province. Neither the climate nor the soil is so well adapted to raising poultry as are those of southern Ireland, but a rather dense population, small or medium farms, nearness to British markets, and extensive cultivation of the land all contribute to poultry-raising with profit. Both branches of the industry, table fowls and eggs, are carried on extensively, and almost all of the popular breeds are kept in one locality or another.

PLATE NO. 84



White Plymouth Rock Hen (American Type).

(*Bred and exhibited by Mr. U. R. Fishel, Fisheltown, Hope, Indiana, U.S.A.*

A winner of many prizes.

Munster is certainly the most backward part of Ireland in poultry-raising, and this has been attributed to various causes.

There is little doubt that the vast areas under grass, and the excellent quality of of the greater portion of the land have combined to make poultry-keeping a neglected pursuit, for though every condition would contribute to making poultry-keeping in Munster a success, the farmers find that they can make a good living by what they call “much more noble means,” than bothering with cocks and hens.

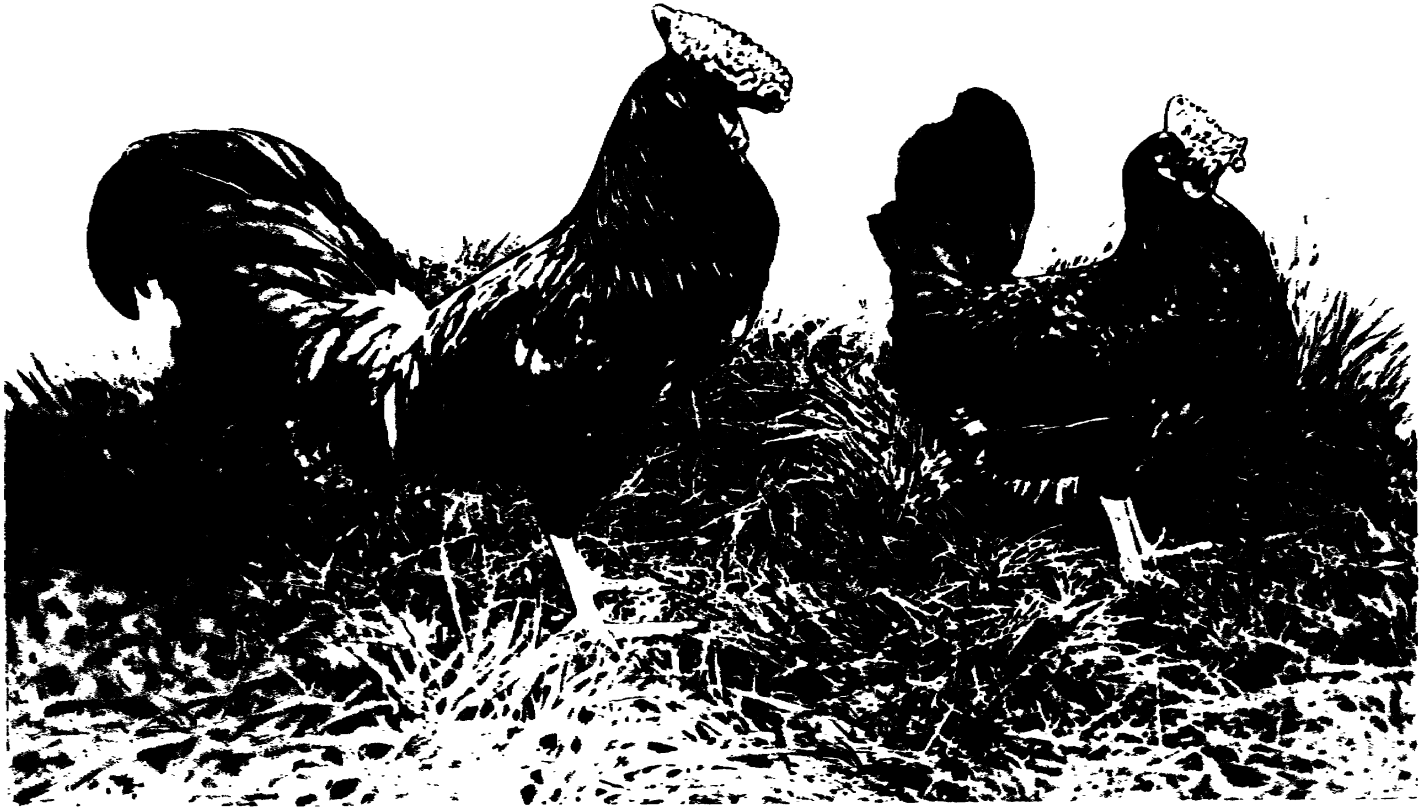
——**WALES.** If we consider the climate of Wales, the soil and contour of the country, the good markets which exist in most districts, and generally consider the Principality from a poultry-keeper's point of view, it would be hard to find any area in these islands which could excel it. In the first place the climate all round the coast and in the valleys is mild, the mean temperature being, probably, higher than in many parts of the South-west of England. The fields are small, which means that they are peculiarly adapted for feathered stock in detached flocks and the greater part of the farm land is given up to sheep grazing. There is an abundance of rough, scrubby or moorland country which is good for little or nothing, but where poultry will thrive. There is a good demand in all the popular watering-places for poultry and eggs at Easter, when prices are exceedingly high, and from Whitsun to Michaelmas the requirements far exceed the supplies. This summer trade is, it is true, one of comparatively short duration, but then it must be borne in mind that it is a far simpler matter to cater for August demands than, for example, those of London in the Derby week. These late chickens come on quickly, the mortality is naturally low, and the rearing is a cheap matter compared with what it is in February and March. In the case of eggs we find reliable “new-laids” hard to get at eight a 1/- in July, and twopence each from August onwards is the usual figure. Then in the populous districts of the South and North-west there is a steady demand for produce that has to be met by outside supplies the year throughout.

It is a difficult matter, in fact it is impossible, to arrive at any reliable figures as regards the present output of poultry and eggs in Wales, but we shall not be far wrong in stating that the quantity of the produce has doubled during the last fifteen years. And it is also gratifying to note a slight gradual increase in the quality. Still, notwithstanding this much greater production, the supplies, at certain seasons, are far below what they ought to be. They have not kept pace with the demand which the continuous increase in the population of the South and the growing popularity of other parts of Wales—as a pleasure garden for the millions of Lancashire, Yorkshire and the Midlands—have created. It is true that there are many outlying districts which have few or no facilities whatever for marketing, but this is so everywhere, and Wales has less cause to complain on that score than many parts of England. Co-operation and some system of collecting the produce is, of course, required, as it is everywhere else, in this matter, and this will no doubt come with time. Indeed, at the time of writing, there is a large scheme for egg-collecting being prepared in at least one district on the same principles which are doing so much for the Irish poultry-keepers.

It is very convenient, sometimes, to lay blame upon other people's shoulders, to call railway companies names and to complain of a hundred-and-one other things which we imagine to be barriers to our progress. But it must be said that the peasantry and the farmers, who are and must always be the greatest producers of poultry and eggs, must set their own houses in order first. They must prove themselves equal to the task of selling really reliable eggs, guaranteed and stamped as such, instead of the ancient articles (some of them, it is to be feared, having been landed in this country in "crates,") which the sea-side visitor is often called upon to struggle with. Of course, all vendors are not to be accused of such rascality, and many who sell stale eggs as fresh ones do so either because they do not appear to count time of any consequence in the age of an egg, or they are utterly thoughtless and careless, But be that as it may, Welsh "country" eggs have earned a bad name in many places, and, of course, the honest seller with his really genuine "new-laids" must suffer, because of the abominable practice of keeping eggs from early summer, when they are cheap, until August and September and even later, without any attempt at preservation, and because of that utterly unscrupulous trick of buying a crate of imported eggs from Liverpool or elsewhere and retailing them, a few dozens at a time, in attractive looking baskets. This kind of thing is, of course, a suicidal policy and it must be remedied, and the evil-doers crushed out by the better policy of honesty, before the public or the shopkeeper will look with a trustful eye upon these "country eggs." Then there are the old questions of grading and maintaining supplies. The former is not yet practised as a regular thing, save by a few and some exclusive poultry-keepers, and, of course, the large eggs must suffer and only realize the price of the small. As to maintaining supplies, this can never be guaranteed until some better system of collection is set agoing.

It seems rather a contradictory state of affairs, but poultry-keeping in Wales, from a utility point of view, is in a more advanced state and looked upon with a friendlier eye generally by the peasants and farmers in those parts of the country which are the most remote. Thus in Anglesey, we find some system not only in rearing, but in collecting. The higgler there, or "dealer" as he is called, is a common object of the country-side, and anyone who has ever been to a village fair in that county, and seen the sides of the streets, the rough pavements, littered with chickens and ducks, tied in couples, and the attendant "henwives" in charge will not easily forget the incident. The "dealer" is in touch with the large seaside towns, such as Llandudno and Colwyn Bay, during the summer season, and with various places beyond the border when the season is over. The quality of the produce from Anglesey, especially the ducks, which are really good, and seem to have a strong blend of Blue Swedish and Pekin in their constitutions, is higher than that in any other part of Wales that we are acquainted with. The egg supply also, indicates that some care and attention is bestowed upon it. The extreme end of Carnarvonshire, about the district of Pwllheli, is another place, "far from everywhere," where the feathered stock is apparently better cared for and where one may see some indication of good management and progress. And some excellent fowls, too, many of which find their way to London, come from the extreme Eastern portions of the Principality bordering on Shropshire. If the people in these districts, in swampy, wind-swept Anglesey, can make such progress with their poultry, if they can sit on old superstitions, cast away ancient customs and, without the help of a "Danish" or any other expert, so vastly improve themselves and their reputations as poultry producers, why cannot the cottagers and farmers of the sheltered inland valleys which are close to the markets and more favourably situated in every way do likewise, or even better? It has been whispered that they are too well off. If that is not so, let them refute the statement and show us why they pretend to despise the goose which lays golden eggs in many an Anglesey swamp, why they cannot compete with the cottagers of the shelterless heights of Lleyn peninsula? In

PLATE No. 85



Redcaps.

(*The property of Mr. John Bamford, Bakewell, Derbyshire.*)

talking to a large retailer of poultry in one of the most populous towns of North Wales last summer, he mentioned, among other things, that it was no use his depending upon "local supplies." Anglesey "dealers" he could do with, but the farmers and others who were close by could never be depended upon. Not only were their supplies dreadfully irregular, but they very often did not come at all when they had been definitely booked for delivery. In times when the demand is only normal one has no choice of ducklings, for example, between "Russian" and "Anglesey," and when the latter sell out, as they quickly do in the Spring, the customer must take the frozen article or go without. Then again, the retailer has such a difficulty and so much worry and disappointment over "local supplies," that it pays him better to telephone direct to St. John's Market, Liverpool, where he knows he will get exactly what he asks for and precisely when he wants it. This state of affairs is not confined to Wales: it is not only a common characteristic of the poultry but of the fruit and vegetable trade of this country in general. But the point to be emphasized is this, Wales is so exceptionally well suited for poultry rearing, its markets comparatively so good, and its people, as is proved in Anglesey and elsewhere, innately endowed with those peculiar instincts which go to make success in *petite culture* that it is a pity to have to record such a backward condition of affairs.

The egg-trade offers even greater inducements than the rearing of table poultry for, notwithstanding the drawbacks above mentioned, the demand for eggs is steadily increasing. The greatest shortage of eggs commences when the holiday makers begin to arrive in July and prices are high in most parts from that time until Christmas. No preparation is made by the poultry-keepers to meet the enhanced demand, which an influx of people obviously creates, by hatching their pullets so that they will come on to lay when the old hens are going into moult. The consequence is that eggs are often not only dear but absolutely unobtainable, even in quite rural districts. One may travel for miles in autumn, too, and never be able to procure an egg from the farmers, and the reason is only too plain. There are a number of pullets, it is true, running about the farm-yard or roadside, with many an antiquated relation, but not one of them have begun to lay, nor will they until late in the spring when eggs are getting cheap. Had they been hatched in March, however, eggs would be forthcoming when most wanted and everybody would be better off. This late hatching, the absurd practice of keeping late-June pullets with the vain hope of their laying the following winter, must be remedied before the production of eggs in Wales or anywhere is much improved. And farmers must learn, and perhaps they will some day, that the field house is the place for their layers just as the field is the place for their sheep, and not the yard. The silly prejudice against fowls on pasture must be wiped out and management and strain generally improved. Then, and not before, will the complaint against foreign importation, high railway rates and the rest bear a reasonable sound. As matters stand now it would make no difference were our ports closed to foreign eggs and our own carried to market for nothing, for there are practically no eggs to market. It is unwise to treat real grievances lightly, knowing only too well that they exist, but it may be repeated that Wales, as a whole, with her enormous advantages, is lamentably backward in the production of poultry produce and that if some more enterprise, forethought, commonsense, and industry were applied to this lucrative branch of agriculture most of the "crying shames" would vanish into oblivion.

—— **COLONIES.** The great advance

that has been made in poultry-keeping during the last few years is not confined to this country, since in other parts of the world striking and rapid progress has been made. Nowhere is this greater than in the British Colonies, some of which have made even more rapid advancement than has been the case at home. It is impossible in a short article to more than indicate the mere outlines of the work that has been accomplished, since to describe it at all fully would require altogether too much space.

AUSTRALIA. Perhaps in no colony has greater progress been made than in Australia, and we find that to-day the poultry industry in that country is in a very flourishing condition. As would naturally be expected, some of the states have devoted more attention to the industry than have others, but taking the country as a whole excellent progress has been made during the last few years. In South Australia and in New South Wales more attention has been devoted to this important branch of agriculture than elsewhere. and in both instances Governmental assistance has undoubtedly played an extremely important part in the great development that has taken place. Recognising the value of poultry raising on proper lines as an adjunct to farming and fruit growing, and the possibilities of a great export trade, the Government assist the industry in every possible way except with actual monetary allowance. The policy adopted is not to assist the lazy man, but rather to help the worker to help himself. Experts in every branch of the industry are provided. Experimental farms have been established, from which farmers and others interested can obtain birds of good breeds at moderate prices, and thus do away to a great extent with the old-time mongrel, which has for so long been the real obstacle to profitable poultry-raising. The Government initiated and controls the over-sea export trade of poultry and eggs, which has been proved such a success. In fact, but for this over-sea trade the industry must have broken down under its own weight, for the ever-increasing production would soon have exhausted the demands of the markets of the Commonwealth, and prices would decline to such an extent that poultry really would not pay. Laying Competitions are extremely popular in Australia, and several very successful ones have already been held. As showing what a valuable purpose laying contests serve the *Adelaide Observer* states that at the Subiaco competition a pen of pure breds in eleven months laid 1,367 eggs, whilst a pen of nondescripts in the same time laid only 591 eggs. The same paper mentions the fact that, out of all the pens of fowls which have competed since the inauguration of laying competitions throughout Australia, only three have laid more than 1,500 eggs, and the birds were, in each case, produced by South Australian breeders. At the Hawkesbury Agricultural College several important experiments have taken place during the last seven years. The first experiment, held in 1902, showed that the average number of eggs laid per bird was 130, whereas in 1908 this average amounted to 173, an advance of one-third. Taking the whole year through the average price of eggs in Australia works out to about 1/4 per dozen, an extremely good average. The most popular breeds in the Commonwealth are White Leghorns, Black Orpingtons and Silver Wyandottes. Langshans, too, are popular, but the newer varieties have taken their place to some extent.

CANADA. While progress has been made in poultry-keeping in Canada during the last few years it has not been so striking or so rapid as in some other colonies. Just why this is so, it is not easy to say, since so far as climate, soil conditions, food supplies and availability to markets are concerned the Canadian poultry-keeper has no reason to complain. A writer, who is an authority on poultry matters in the Dominion, recently stated that like every other branch of farming in Canada, poultry-keeping has before it splendid possibilities, but is still awaiting developments. As a specialized industry poultry-keeping has made little more than a beginning. There are a few farms in Canada that are devoted exclusively to poultry, but they are mostly of quite recent establishment and there has been insufficient time to say whether they are likely to prove successful. Poultry raising in Canada is essentially an adjunct or a side-line to the ordinary business of the farm. Unfortunately, in far too many instances it is largely a neglected adjunct. While the majority of farmers agree that they should keep a few fowls for the purpose of supplying eggs for family use and occasionally meat for the table, they have not considered the claims of the industry seriously, and do not give their poultry-yards more than scant attention. Farm poultry-raising is conducted for the most part by the women and children. The hens, ducks, geese and turkeys are allowed to forage for themselves for the greater portion of each year. They are seldom considered as a part of the regular stock on the farm, to be housed, fed and managed with a view of financial profits. Very little fattening is done, and as a consequence many of the fowls offered for sale as dressed poultry during the autumn and winter on the average city or town market do not attract buyers or command high prices. Dressed poultry, as a rule, is lacking in appearance, type, uniformity and quality. The eggs supplied by many farmers to country stores are just " eggs." They are not selected or classified to colour, age or size. There are two important experimental stations, one at Ottawa and the other at Guelph. At the former experiments have been conducted for twenty years past in breeding, egg production, feeding and management. For fifteen years the Guelph College has been carried on, and some excellent work has been accomplished. Regular courses of instruction are held, and large quantities of bulletins and reports are sent to all parts of the country free of charge. In nearly every town in Canada there is held a summer and autumn fair, an important feature of which is the display of poultry. At some of the larger fairs as many as 4,000 birds are exhibited, while the prize money amounts, in some cases, to upwards of 3,000 dollars. When the last census was taken in Canada, there were 17,922,658 head of poultry, valued at 5,723,890 dollars. It is interesting to study the exports of eggs from Canada during the last twenty-five years. In 1882 there were 10,499,082 dozen eggs exported, valued at 1,643,709 dollars. From that time until 1888 there was a gradual increase until the number reached 14,170,859 dozen, valued at 2,122,283 dollars. This high average continued for two years ; there was then a decline until 1894, when only 5,000,000 dozen were exported. This was followed by a gradual increase until 1902, when 11,600,000 dozen were exported. Since that time the exports have descended until in 1908 there were only 1,365,890 dozen, valued at 310,818 dollars, which is lower than any year since 1872. Since 1901 Canada has been importing eggs to a considerable extent.

INDIA. Very little has been done in India on a properly organized basis. Of course, numberless fowls are kept, but these are mostly of an extremely poor and valueless type. There appears, however, a decided inclination to develop the industry along proper and up-to-date lines, and to this end a certain amount of Government support is being given. The *Pioneer*, of Calcutta, says that a start has lately been made with organized poultry-farming, and it is interesting, as showing the future before the industry, to note that in the New Bengal a spirit of enterprise has been called into existence spontaneously. Already it would seem there exists a flourishing export trade with Burma, which no doubt is capable of great expansion. The towns of Chittagong and Dacca are growing rapidly, and this will bring a larger demand for poultry. Last year fowls, ducks and eggs to the value of nearly four lakhs of rupees were exported to Burma from Chittagong port, which largely come from the Noakhali district, where a great impetus has been given to the industry by the opening up of the country by the Assam-Bengal Railway. In Burma fowls which cost six annas (an anna equals one penny) per head in Noakhali are sold for from fourteen annas to one rupee, and a duck's egg from six pies to one anna, against a first cost of two rupees per 100 in the district. From recent investigations in poultry-breeding in India the breeds generally unsuited for utility purposes were found to be Cochins, Brahmas and all breeds with heavily-feathered legs, because they do very badly in the plains during the rains and are poor layers; also Dorkings and Spanish, as they are too delicate. The most suitable breeds for general utility purposes are considered to be Plymouth Rocks, the best strain of these being the Barred Rock, Orpingtons of all strains and Wyandottes of all strains, with possibly Silver or White Wyandottes as the best. As regards the crossing of imported poultry with native breeds, it is believed that the lighter laying breeds, especially the Minorcas and Leghorns, would be the most suitable imported breeds for a first cross, and at a later stage Plymouth Rocks, Orpingtons and Wyandottes. The best of the native breeds for crossing purposes are Hyderabad or Mysore Games, Penang Langshans and Chittagongs.

NEW ZEALAND. Like its near neighbour, Australia, New Zealand has recently been devoting a considerable amount of attention to Laying Contests, which have awakened a great deal of interest, not only in the country itself, but in England, since some of the records attained by the competitors have been so remarkable. This is not the place, of course, to give a detailed account of the contests; suffice it to say that they have done the industry much good and have awakened a great deal of interest among the general public, as well as those particularly interested. The climate of New Zealand is excellently suited to poultry, and in all parts of the country they do exceedingly well. White Leghorns are immensely popular, and are apparently the variety that is most extensively kept. A very interesting by-law has been adopted by the Wellington City Council, which shows that attention is being bestowed upon the industry, although such attention may not be altogether desirable. No poultry, says the by-law, shall be kept in any part of the city except in a properly constructed poultry-house, with a rain-proof roof and properly graded concrete or asphalt floor, and with a suitably enclosed run or scratching ground attached. Each poultry-house must be at least fifteen feet from any dwelling or street, and the fence of the run must be at least fifteen feet from a dwelling and six feet from the adjoining premises or street. Poultry-houses must be lime-washed once in three months, and runs cleaned weekly and sanded or limed.

SOUTH AFRICA. Perhaps in no other country in the world has the poultry-keeper so many or such serious enemies as he has in South Africa. Disease, for one thing, makes enormous ravages among the fowls, and to safeguard them from diseases produced by tick bite, and to save them from other blood-sucking parasites, it is necessary, systematically, to dip poultry every fortnight in emulsions of coal-tar products and to spray the insides of their houses with lysol water and even to put a few drops of that excellent antiseptic in their drinking water. Fowl sickness, another name for anæmia, also causes much trouble, but the Government are sparing no efforts in assisting the poultry-keepers in that colony to overcome their difficulties.

Excellent progress has been made during the last few years, and there is every prospect of great developments during the next decade. Prices for poultry produce range extremely high, and there is never any difficulty in disposing of fowls and eggs at a good figure. Perhaps the greatest need in South Africa at the present time is organization, and steps are being taken to establish central depôts. These would, without doubt, serve a very valuable purpose, and would be the means of helping on the industry more than anything else.

POULTRY VALUES. It is very desirable in poultry production to know what one is working for, and not to breed fowls of any description, for marketable purposes, without some definite aim as regards probable marketing periods. Before eggs are put down for incubation it should be known, within reasonable limits, whether the resultant fowls will reach a suitable maturity or condition upon a rising or a falling market; and consequently whether the contemplated production is likely to show a sufficient margin of profit over cost of production, or whether by the alteration of the date of the commencement of the operations, the margin may be widened. In such work, the end must always be in view at the beginning, and the neglect of this commercial foresight is a common cause of disappointment in the case of beginners, whose anxiety to commence production outweighs all other considerations.

It is, of course, an unfortunate fact that the most experienced are sometimes badly caught by the unexpected fluctuations of a very sensitive market, and the poultry market quickly responds to influences altogether beyond the knowledge of the average producer; nevertheless the man who systematically and continuously markets with a view to the average expectancy of seasonable conditions may reasonably anticipate a better average annual result than those whose output is spasmodic and without reference to deductions based upon a sufficient experience of the past. Such deductions must of course be qualified by the more or less constant changes in the conditions of supply and demand, and more especially in relation to the progress of foreign competition; but the average of past experience must first be ascertainable, before it is possible to fully appreciate the possible trend of contemporary influencing factors.

There is, moreover, another and important aspect of the subject that demands careful preliminary consideration, and that is the question of value in relation to the district of production, prices being influenced by local methods of preparation, and to some extent by the reputation of a district as regards some special descriptions of produce. In this connection it must be recollected that, according to distance and facilities for transport, the production of any given locality must either bear a charge for carriage to London, to some provincial market, or be disposed of within a small local radius.

— **LONDON MARKETS.** In the following tables will be found the normal tendency of the London markets, as indicated by the average weekly quotations for the principal descriptions of poultry. The marginal values are approximate, and necessarily wide; and in the case of the Surrey and Sussex descriptions, the two have been bulked under the general and more accurate heading of Sussex fattened. Imported fowls have of course been eliminated from the calculations. The values are given for the successive weeks of the year, from one to fifty-two, commencing with the first week in January.

Relative to the other descriptions, the general heading of ducks includes ducklings, and that of geese includes goslings—and as the various descriptions become seasonable the quotations have been merged into one set of figures in each case; as a general indication of the respective influences it may be noted that goslings begin to appear in quotations towards the end of March, and that the duckling season makes its influence felt from about February to the end of June.

The quotations for turkeys are very wide, ranging from the lowest prices for hens to the highest for cocks; and as they are confined to the chief English production, the period referred to is very limited, no notice being taken of the large numbers of small and medium birds imported during a longer season for such descriptions. The live-hen values have, of course, a special reference to the market of which the demand of the London Jewish community forms the back-bone. In referring to the average values, as given for any description of poultry for any one week, it must be remembered that slight variations are in some instances unavoidable; and the chief reason for such discrepancies will be found in the movable Christian feasts, and (in the case of live-hens), the Jewish festivals, for which due allowance must be made according to the period of their occurrence in any one year (*see pages* 403 *and* 404).

In addition to the foregoing, the following average quotations for Guinea Fowl practically cover the period during which there is any quotable supply and demand, as regards English birds.

AVERAGE VALUES OF GUINEA FOWL.

6*th*	week	2/0	3/0	13*th*	week	3/0	3/6
7	,,	2/0	3/0	14	,,	3/3	3/9
8	,,	2/6	3/0	15	,,	3/6	3/9
9	,,	2/9	3/3	16	,,	3/3	4/0
10	,,	3/0	3/6	17	,,	3/6	4/0
11	,,	2/9	3/9	18	,,	3/6	4/0
12	,,	3/0	3/9	19	,,	3/6	4/0

—— **PROVINCIAL MARKETS.** The available particulars regarding the provincial markets are necessarily somewhat partial, but the chief centres of demand and distribution are dealt with in sufficient detail for the general purpose; and the smaller markets are more or less unimportant except to those in their immediate vicinity, to whom the local particulars are already known or readily available. It should, however, be noted that in addition to direct imports, some of the provincial markets are in close touch with London, whence some of the supplies are transferred as occasion arises. The average values ruling in the following provincial markets have been extracted from the reports of the Inspectors and Market Reporters of the Board of Argiculture and Fisheries, which have from time to time been communicated to the official organ of that department:—

LIVERPOOL. The principal trade here is in imported produce, of which the chief is of Irish origin, as regards live and dead chickens, ducks and turkeys, and geese, the latter being mostly live birds for stubbling on English farms. The trade with Russia is chiefly in chickens and geese, with some considerable, but less, quantity of ducks. Canadian and American chickens are also a large trade, and a considerable distribution takes place in all these descriptions, from this important centre.

The home-reared supplies are limited, and the local Liverpool seasons and prices are as follows:—Unfattened chickens May to July, 8d. per lb. wholesale, 10d. per lb. retail. Ducks, August to October, 8d. per lb. wholesale, and 10d. per lb. retail. Geese at Christmas, 7d. per lb. wholesale and 9d. per lb. retail. Turkeys at Christmas, 9d. to 10d. per lb. wholesale, and from 11d. to 1/0 retail.

MANCHESTER. Irish poultry is received *via* Holyhead, Russian *via* Hull, and American and Canadian by way of Liverpool. The chickens are chiefly Irish, except during the early months, when the foreign imports form the bulk of the supplies. The ducks are mainly Irish, but are also received from Aylesbury as well as from the North, and in the

AVERAGE VALUES OF TABLE FOWLS (Each).

Week	Sussex Fattened		Yorkshire		Boston		Essex		Welsh		Irish	
1	2/9	5/6	2/0	3/6	2/0	3/0	2/0	3/6	2/0	2/9	1/6	2/9
2	3/0	5/0	2/9	3/3	2/3	3/0	2/9	3/6	2/3	2/9	1/9	2/9
3	3/0	5/0	2/6	3/3	2/3	3/0	2/3	3/3	2/0	2/6	1/9	2/6
4	2/9	5/6	2/6	3/6	2/3	3/3	2/6	3/6	2/0	2/9	2/0	2/9
5	3/0	5/6	2/6	3/6	2/3	3/3	2/3	3/6	2/3	2/9	2/0	2/9
6	3/0	5/9	3/0	3/6	2/9	3/6	2/6	3/9	2/3	2/9	2/0	2/9
7	3/6	5/9	3/0	3/6	2/9	3/9	2/9	3/9	2/3	2/9	2/0	2/9
8	3/6	6/0	3/0	3/9	2/6	4/0	2/6	4/0	2/3	3/0	2/0	3/0
9	3/0	6/0	3/0	3/9	2/6	4/0	2/6	4/0	2/3	3/3	2/6	3/3
10	3/6	6/0	2/9	3/9	2/6	4/0	2/6	4/0	2/0	3/3	2/0	3/3
11	3/0	6/0	2/9	3/9	2/6	4/0	2/6	4/0	2/0	3/3	1/9	3/6
12	3/3	5/9	2/6	3/9	2/6	3/9	2/6	4/0	2/3	3/0	1/9	3/3
13	3/6	6/0	2/6	4/0	2/6	4/0	2/6	4/0	2/6	3/3	2/0	3/6
14	3/6	5/9	2/6	3/9	2/6	3/9	2/6	3/9	2/3	3/3	2/0	3/3
15	3/6	6/0	2/3	3/9	2/6	3/9	2/6	3/9	2/0	3/6	2/0	3/6
16	3/3	6/0	2/6	3/9	2/6	3/9	2/6	4/0	2/3	3/3	2/0	3/6
17	3/6	6/0	2/9	3/9	2/6	4/0	2/6	4/0	2/3	3/3	2/0	3/6
18	3/3	6/0	2/6	3/9	2/3	4/0	2/3	3/9	2/3	3/6	2/0	3/6
19	3/6	6/6	2/9	3/6	2/6	4/0	2/6	4/0	2/6	3/6	2/3	3/6
20	3/6	6/0	2/9	3/9	2/6	4/0	2/6	4/0	2/3	3/6	2/0	3/9
21	3/6	6/0	2/6	3/9	2/3	3/9	2/3	3/9	2/3	3/6	2/0	3/6
22	3/6	6/0	2/3	3/6	2/3	3/6	2/3	3/6	2/0	3/3	2/0	3/3
23	3/6	6/0	2/3	3/6	2/0	3/6	2/3	3/6	2/0	3/0	1/9	3/0
24	3/6	6/0	2/6	3/9	2/3	3/6	2/6	3/6	2/6	3/0	2/3	2/9
25	3/6	5/9	2/9	3/3	2/3	3/6	2/0	3/6	2/0	3/0	1/9	3/0
26	3/0	5/9	2/6	3/6	2/3	3/6	2/3	3/6	2/0	3/0	1/8	3/0
27	3/6	5/6	2/6	3/9	2/3	3/6	2/6	3/9	2/3	3/3	2/0	3/3
28	3/0	5/6	2/3	3/6	2/0	3/6	2/6	3/3	2/0	3/0	1/9	3/0
29	3/0	5/6	2/0	3/3	1/9	3/6	1/9	3/3	2/0	3/0	1/6	3/0
30	3/0	5/6	2/0	3/0	1/9	3/3	1/9	3/0	2/0	3/0	1/6	3/0
31	2/6	5/0	2/0	3/0	2/0	3/0	1/9	3/0	1/9	2/9	1/6	2/9
32	2/6	5/0	2/0	3/0	2/0	3/0	2/0	3/0	2/0	2/6	1/9	2/3
33	2/6	4/6	1/9	2/9	1/9	3/0	1/9	3/0	1/9	2/3	1/6	2/3
34	2/6	4/0	1/9	2/6	1/6	2/9	1/9	2/9	1/9	2/0	1/6	2/0
35	2/3	4/0	1/6	2/9	1/9	3/0	1/9	3/0	1/6	2/6	1/3	2/6
36	2/6	4/6	1/9	3/0	2/0	3/0	2/0	3/0	1/6	2/0	1/6	2/0
37	2/3	4/3	1/9	2/9	1/9	2/9	1/9	2/9	1/6	2/0	1/6	2/0
38	2/6	4/6	2/3	3/0	2/3	3/0	2/0	3/0	2/0	2/6	1/9	2/3
39	2/6	4/6	2/0	3/0	2/0	3/0	1/9	3/3	1/9	2/6	1/6	2/6
40	2/6	4/0	1/9	2/9	1/9	3/0	1/9	3/0	1/6	2/9	1/6	2/3
41	2/6	4/3	1/9	3/0	1/9	3/0	2/0	3/0	1/9	2/9	1/6	2/6
42	2/9	4/6	1/9	3/0	2/0	2/9	2/0	3/0	2/0	2/6	1/3	2/6
43	2/6	4/6	2/0	3/0	2/0	2/9	1/9	2/9	1/9	2/9	1/6	2/3
44	2/6	4/6	1/9	2/9	1/6	2/9	1/6	2/9	2/0	2/6	1/3	2/3
45	2/6	5/0	1/9	3/0	1/9	2/9	1/9	3/0	2/0	2/9	1/6	2/3
46	2/6	4/6	1/9	2/6	1/9	2/9	1/9	2/9	1/9	2/9	1/6	2/3
47	2/6	5/0	1/6	2/6	1/6	3/0	1/9	3/0	1/6	3/0	1/3	2/3
48	2/6	4/6	1/6	2/6	1/6	2/9	2/0	2/9	1/9	2/9	1/3	2/3
49	2/6	4/6	1/9	2/9	1/9	3/0	1/9	3/0	1/9	3/0	1/9	2/6
50	3/0	5/0	1/9	3/0	2/0	3/6	2/0	3/6	2/0	2/6	1/9	2/6
51	3/0	6/0	2/9	4/0	2/6	4/6	2/6	4/6	2/3	2/6	2/0	2/6
52	3/0	6/0	2/9	3/9	2/9	4/0	2/6	4/0	2/0	2/3	1/9	2/3

AVERAGE VALUES OF OTHER DESCRIPTIONS.

Week	Ducks		Geese		Turkeys		Live Hens	
1	2/3	4/0	5/0	10/0	4/0	15/0	1/9	2/9
2	3/0	4/3	5/0	7/6	4/6	12/6	1/9	2/9
3	3/6	4/0	5/0	7/0	5/6	12/0	1/9	2/6
4	2/9	4/6	4/6	7/0	4/0	12/0	1/9	2/6
5	3/0	5/0	4/6	7/6	4/0	12/0	2/0	2/9
6	3/6	5/6	6/0	8/0	5/0	15/0	1/9	3/0
7	3/6	6/0	6/0	8/6	—		1/9	3/0
8	3/0	6/6	7/0	8/6	—		1/9	3/0
9	3/0	7/0	—		—		1/9	3/3
10	4/0	7/0	—		—		2/0	3/3
11	3/6	7/0	—		—		1/9	3/3
12	3/6	7/6	7/6	9/0	—		1/10	3/3
13	4/0	7/0	6/6	8/6	—		2/0	3/6
14	3/6	6/6	6/0	8/6	—		1/9	3/0
15	3/9	6/6	7/0	8/6	—		1/9	2/9
16	3/6	6/0	6/0	7/0	—		1/10	2/6
17	3/6	6/0	6/0	7/6	—		1/10	2/9
18	3/6	5/6	5/0	7/0	—		1/10	2/6
19	4/0	6/0	5/0	7/0	—		2/0	2/9
20	3/6	6/0	5/0	6/6	—		2/0	2/9
21	3/6	5/6	5/0	6/0	—		2/0	2/9
22	3/0	5/0	4/6	6/0	—		2/0	2/6
23	2/6	4/6	4/0	6/0	—		1/10	2/6
24	2/6	4/0	4/0	5/0	—		1/6	2/6
25	2/3	3/9	4/6	5/6	—		1/9	2/6
26	2/3	3/9	4/6	5/6	—		1/8	2/6
27	2/9	3/9	4/6	5/6	—		1/9	2/6
28	2/3	3/3	5/0	6/0	—		1/6	2/6
29	2/0	3/3	5/0	5/6	—		1/6	2/6
30	1/9	3/3	5/0	6/0	—		1/6	2/3
31	1/6	3/3	4/6	5/6	—		1/3	2/3
32	2/0	3/0	5/0	6/0	—		1/6	2/3
33	1/9	3/0	4/6	5/6	—		1/4	2/0
34	1/9	2/9	4/6	5/6	—		1/3	2/0
35	2/0	3/0	5/0	6/0	—		1/3	2/3
36	2/0	3/0	5/6	6/6	—		1/6	2/3
37	1/9	3/0	5/6	6/6	—		1/3	2/0
38	2/3	3/3	5/6	7/0	—		1/6	2/6
39	2/0	3/3	5/0	8/0	—		1/3	2/6
40	2/0	3/0	4/6	7/0	—		1/3	2/3
41	2/0	3/6	5/0	7/6	—		1/6	2/3
42	2/6	3/0	4/6	6/0	—		1/0	2/0
43	2/3	3/3	4/0	6/0	—		1/6	1/9
44	2/3	3/6	4/6	6/6	—		1/0	1/9
45	2/6	3/6	4/6	7/0	—		1/6	2/0
46	2/3	3/6	5/0	6/6	—		1/4	2/0
47	2/3	3/6	5/0	7/0	4/0	14/0	1/3	2/3
48	2/0	3/6	4/6	6/6	5/0	14/0	1/0	2/3
49	2/3	3/6	5/0	7/0	4/0	15/0	1/3	2/3
50	2/6	4/0	5/0	7/6	3/0	15/0	1/6	2/6
51	2/6	4/9	5/0	10/0	3/6	30/0	2/0	3/0
52	2/6	4/6	6/0	10/0	7/0	30/0	1/9	2/9

(The Encyclopædia of Poultry.)

PLATE NO. 86

Rosecomb Rhode Island Reds.

winter the Russian supplies are available. Irish and Russian geese meet the bulk of the demand, with a few from the Continent and for turkeys this market depends primarily upon Ireland, and to some extent draws upon the Continent. For the local market the chief season for chickens is from February to April, the values ranging from 2/- to 2/6; for ducks from June to October, the retail value is about 10d. per lb.; for geese, from September to January, at 9d. per lb. retail; and at Christmas the retail value of turkeys is from 9d. to 1/0 per lb.

BIRMINGHAM. The chief supplies, apart from foreign imports, are derived from Ireland, Wales, and some of the near-at-hand English counties. Unfattened chickens are in demand from April to June at up to 1/- per lb.; and ducks during April and May at from 6/- to 7/6 per couple, and again in the autumn, at 4/-; geese in September and October at 6d. to 7d. per lb.; and turkeys at Christmas from 8d. to 10d. per lb. and upwards.

LEICESTER. The demand is largely supplied from London and Liverpool, and ultimately abroad, the local supplies being very limited. Early spring chickens realize 2/6 to 2/9 each, half fattened; ducks, from 2/6 to 2/9 during June, July, and August; geese, 9d. and 10d. per lb. at Michaelmas; and turkeys, 1/- to 1/2 per lb. at Christmas.

LEEDS. From this centre poultry is sent to many smaller markets, and supplies are derived from English producing districts, from Ireland, and to some extent from foreign imports. From Christmas to early autumn fattened chickens sell at 2/6 to 3/-; from July to the end of the year, ducks realize 3/- to 3/6; geese fetch 8d. to 10 per lb. from October to Christmas; and turkeys from 10d. to 1/- per lb. during the winter season for these birds.

YORK. This is a buying market for some of the larger centres, and the prices paid are 2/6 to 3/- for half-fattened chickens, from March to May; 3/- to 3/6 for ducks, during July and August; 8d. to 10d. per lb. for geese at Michaelmas and Christmas; and 1/- to 1/3 per lb. for turkeys at Christmas.

PETERBOROUGH. This is another buying market, for the ultimate supply of London, and the local demand is as follows: Early spring chickens, 2/6, 3/-; ducks, June to August, 3/-; geese, 1/- per lb. at Michaelmas and Christmas; and turkeys 1/- per lb. at Christmas.

NORWICH. This market is the centre of a considerable producing district, from which are distributed large numbers of ducks and turkeys, and some quantity of chickens. The local values are 8d. to 10d. per lb. for chickens, from March to May; 1/- to 1/2 per lb. for ducks, from June to August; 1/- to 1/2 per lb. for geese, at Michaelmas and Christmas; and from 1/- to 1/4 per lb. for Christmas turkeys.

BRIGHTON. Situated in a large poultry-producing county, this market is practically assured of a good local supply during the greater part of the year; but is at certain periods dependent to some extent upon the Canadian imports. The average values are 3/- to 3/6 for half-fattened chickens, from March to June; 3/- to 3/6 for spring and summer ducklings; 8d. to 10d. per lb. for Michaelmas and Christmas geese; and 9d. to 1/- per lb. for turkeys, from October to February.

CHICHESTER. The same sources of supply serve to meet the requirements here, as in Brighton; and from March to April, chickens sell at 5/- to 6/-; ducks at 2/9 to 3/6 during June and July, and at Christmas; geese realize 8d. to 10d. per lb. at Michaelmas and Christmas; and turkeys are worth from 10d. to 1/- per lb. from Christmas to Easter.

PLYMOUTH. This Market is supplied almost entirely from the West, at 5/- to 5/6 per couple for chickens, from November to January; 6/- per couple for ducks at Christmas; 7d. to 10d. per lb. for geese, in December and January; and up to 10d. per lb. for turkeys at Christmas.

BRISTOL. The chief source of supply is Ireland, with the addition of some locally reared poultry. From March to June, chickens sell at 2/- to 2/6; ducks at 7d. per lb. during March to May, and December; geese 8d. per lb. retail, September to January; and turkeys realize 8d. to 10d. per lb. from November to February.

GLASGOW. That there is plenty of scope for Scotch farmers as poultry producers is abundantly evident from the fact that this market depends almost entirely upon Ireland for its supplies, and at the periods when that source fails the imports from Russia, America, and Canada are used, as well as Continental supplies sent by way of London.

The average values for unfattened chickens are 1/6 to 2/6 from April to June; 2/- to 2/9 for ducks, from June to August; 8d. to 10d. per lb. for geese at Michaelmas, and at Christmas; and 1/- to 1/2 per lb. for turkeys from October until the following spring.

EDINBURGH. The conditions in this market are practically similar to those in Glasgow, the trade is mainly Irish. During May and June the value of unfattened chickens is 1/3 to 1/9; from June to August, ducks are from 2/- to 2/9; at Michaelmas, geese sell at 8d. to 10d. per lb.; and from October to the Spring, turkeys realize 1/- to 1/2 per lb.

ABERDEEN. This market depends very largely and reluctantly upon the American supplies, and the values per lb. for local purposes are: 6d. to 9d. for chickens, from February to April; 4d. to 5d. for ducks, from December to January, and for ducklings from May to August; 4d. to 5d. for geese at Christmas; and 8d. to 1/- for turkeys, during December and January.

DUNDEE. Here there is an instance of a Scotch market being almost entirely supplied locally, at the following rates: (wholesale) 1/10 to 2/3 for chickens, from January to March; 1/10 to 3/- for ducks, during August, Christmas and January; 6d. per lb. for geese at Christmas (only); and 8d. to 10d. for turkeys, at the same season.

PRESERVATION OF EGGS (*see* "Eggs").

PRESERVATION OF PLANT (*see* "Houses").

PRIMARIES are the flight-feathers which are not visible when the bird is at rest.

PRODUCTIVE LIFE OF HEN (*see* "Egg Production").

PULLET. A young hen under twelve months old.

QUALITIES OF FOOD (*see* "Feeding Stuffs").

QUANTITIES, IN FEEDING (*see* "Feeding").

RACE. A class regarding which there are doubts as to whether they constitute a distinct species, or a variety of a recognised one. Colloquially, a breed or variety.

RAILWAY RATES AND FACILITIES. The value to the producer of any commodity must always largely depend on the cost of getting it to market. Poultry-keepers in common with dairy-farmers, fruit-growers and others who produce their goods in close proximity to a populous centre have an immense advantage over those who have to place their goods on rail, which is only partially counterbalanced by the larger rents they have to pay. The cost of transit does not always depend on the mere distance, but is often considerably affected by the competition of different railway lines, and on starting a business far from towns particular enquiries should be made as to rates charged. This is the more necessary as it is well known to experts that the charges for perishable articles are often really in excess of what is legal. Much dairy produce and poultry is sent to the large consuming centres as "perishable" goods in quantities of one to two cwts. by passenger train. On the greater part of such consignments the rates charged are in excess of the statutory maximum, and are consequently illegal. But the outward appearance of illegality is avoided by attaching "conditions" to the forwarding of the goods to which no exact money equivalent can be allocated. Thus the statutory maximum for one cwt. of poultry or eggs for a distance of 110 miles would be 3/6. On payment of this charge the freighter is entitled to compensation for loss or damage. Delivery can be arranged for at the standard charge of 3d. per cwt. If the goods are sent at owner's risk, a reasonable reduction from the company's risk rate would be from 15 to 25 per cent., making the station to station charge, say, 2/10, and with 3d. added for delivery 3/1. The charge actually made is 4/8. These rates are published in a table headed "Owner's Risk Scale of Rates," and they are stated to be applicable between all stations . . . . for the conveyance of the undermentioned articles. Then follows "but the signing of a risk note is an indispensable condition upon which these low rates can be applied." Probably few poultry-keepers are aware that these rates, so far from being low, are in many instances half as high again as the maximum allowed by Parliament, and most of them sign the risk note under the impression that they are making a good bargain. The Scotch farmers have not submitted to such a tariff, and on the Caledonian, Nórth British and other railways, instead of a charge of 4/8, as above, the scale in force quotes 1/11. If the Scotch scales of rates are remunerative to the Scotch companies the English scales are obviously unjust to the English producer.

Then again, favourable treatment is accorded to foreign produce; but, notwithstanding the stringent provisions of the legislature, as to the publication of the cross-channel rates, it is almost impossible to know what they really are, or in what proportion the land or sea carriage should be divided. A railway company provides a cross-channel service at great outlay of capital, makes a large yearly loss on working, contributes largely to port and harbour expenses, and charges a combined rate which can be divided in any manner the company pleases when justification is needed. If it is true, as they contend, that no preference is given on the land carriage of foreign produce, that proposition can only be maintained by attributing such low rates to sea freight as would make the loss on marine and harbour undertakings much greater than the accounts show them to be.

These remarks are made on the authority of the best legal authority on railway rates, and it would seem that in our competition with foreign producers of eggs and poultry we are suffering seriously through undue favour shown to them. When this matter is probed to the bottom we find that the reason the companies are thus so kind to our foreign rivals is the fact that their goods come over in large consignments, whereas home-grown goods, and especially poultry, are necessarily in small ones, and that appears to be the only excuse which it is possible to put forward for this handicapping of home industries. Mr. T. Waghorn, Barrister-at-Law, the well-known legal authority and expert on railway matters, writes as follows in a pamphlet on "Agriculture and Railway Rates": "Evidence laid before the Departmental Committee, on behalf of the Central Chamber of Agriculture, and by other witnesses, clearly established the proposition that home produce is chårged at double foreign rates. When all relevant circumstances are taken into account, when due consideration is given to the bulk, the packing, the general convenience of the foreign traffic on the one side, and to the cheapness and the economy of the facilities afforded to home produce on the other, it is contended that the home produce, in almost every instance quoted, is charged at rates, as nearly as may be, the exact double of those levied on imported produce."

Of late years the leading British companies have instituted special rates for small quantities of farm produce, of course, including eggs and poultry. The pioneers of this movement were the Great Eastern and Great Western, and there is no doubt that these have been a boon to very small senders, more particularly to those who supply private houses direct from the farm. The Great Western Company have shown a disposition to meet traders and producers in various particulars regarding the traffic over their immense system, apparently with the laudable object of developing a large increase in the smaller industries and consequent traffic between, say, Cornwall and London. Examples of these concessions may be cited in the construction of greatly improved trucks, in which the waterproof covering is supported well above the load, thus allowing a free current of air to pass through, a very great advantage in hot weather. Mixed consignments are allowed for goods carried 100 miles at the rate for the whole, for instance, in order to have the advantage of the reduced rate for three tons, a sender who has a ton of poultry can make up the three tons with fruit or dairy produce.

The following tables of rates for small lots by passenger train and large ones by goods train are those of the Great Western company. Equally moderate rates and as great facilities are doubtless allowed on other lines, especially where there is competition, but these will serve to give the enquirer a general idea of the approximate cost of conveyance of his produce in whatever part of England he may be situated.

TABLE I.—By passenger train, at owner's risk, inclusive of delivery within the company's ordinary free cartage boundary :—

Distance.	7 lbs.	9 lbs.	10 lbs.	12 lbs.	14 lbs.	16 lbs.	17 lbs.
Miles.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Up to 30..	0 6	0 6	0 6	0 6	0 6	0 6	0 6
,, 50..	0 6	0 6	0 6	0 6	0 6	0 6	0 6
,, 100..	0 6	0 6	0 6	0 6	0 7	0 7	0 8
,, 200..	0 6	0 7	0 8	0 9	0 10	0 10	0 11
Above 200..	0 6	0 8	0 9	0 10	0 11	1 0	1 0

	19 lbs.	20 lbs.	21 lbs.	22 lbs.	23 lbs.	24 lbs.	Above 24 lbs.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	d.
Up to 30..	0 6	0 6	0 6	0 6	0 6	0 6	*⅛ per lb.
,, 50..	0 6	0 6	0 6	0 6	0 6	0 6	¼ ,,
,, 100..	0 8	0 8	0 9	0 9	0 9	0 9	⅜ ,,
,, 200..	0 11	0 11	1 0	1 0	1 0	1 0	½ ,,
Above 200..	1 1	1 2	1 2	1 3	1 3	1 3	⅝ ,,

* No less charge than 6d. per Consignment.

TABLE II.—Conveyance by goods train. Scale of rates for fresh meat, dead poultry and dead rabbits, inclusive of delivery within the company's ordinary free cartage boundary :—

Miles.	10 cwt. lots. Per Ton. s. d.	1 ton lots. Per Ton. s. d.	2 ton lots. Per Ton. s. d.	3 ton lots. Per Ton. s. d.
30	15 10	15 0	14	13 4
35	17 1	15 10	15 0	14 2
40	18 4	17 1	3	15 5
45	19 7	18 4	17 6	16 8
50	20 10	19 7	18	17 11
55	22 1	20 10	20 0	19 2
60	23 4	21 8	20 10	20 0
65	24 2	22 6	21 8	20 10
70	25 0	23 4	22 6	21 8
75	25 10	24 2	22 11	22 1
80	26 8	25 0	23 9	22 6
85	27 6	25 10	24 7	22 11
90	28 4	26 8	25 0	23 4
95	29 2	27 6	25 5	23 9
100	30 0	27 11	25 10	24 2
110	31 8	29 2	27 1	25 0
120	33 4	30 10	28 4	25 10
130	35 0	32 1	29 2	26 8
140	36 8	33 4	30 5	27 6
150	38 4	35 0	31 8	28 4
160	40 0	36 3	32 6	29 2
170	41 8	37 6	33 4	30 0
180	43 4	39 2	35 0	30 10
190	45 0	40 0	35 10	31 8
200	45 10	40 10	36 8	32 6
210	46 8	41 8	37 6	33 4

TABLE II.—*continued.*

Miles.			1 ton lots.		2 ton lots.		3 ton lots.	
	Per Ton.		Per Ton.		Per Ton.		Per Ton.	
	s.	d.	s.	d.	s.	d.	s.	d
220	47	6	42	6	38	4	34	2
230	48	4	43	4	39	2	35	0
240	49	2	44	2	40	0	35	10
250	50	0	45	0	40	10	36	8
260	50	10	45	10	41	8	37	6
270	51	8	46	8	42	6	38	4
280	52	6	47	6	43	4	39	2
290	53	4	48	4	44	2	40	0
300	54	2	49	2	45	0	40	10

There is every probability of a great advance in road motor conveyance in the near future, and producers may look forward with confidence to that loss of monopoly by the railway which will induce them to use every means of retaining their traffic. The great advantage of the road motor is its ability to pick up and put down its loads at the start and finish of the journey, thus avoiding two loadings and unloading at the stations, and for this reason it must prove a very formidable rival to the railways for moderate distances. It will, indeed, be well to possess alternative methods of conveyance, and it would seem to be to the interest of the present companies to do all in their power by the lowest possible charges and the giving of facilities to render unnecessary the establishment of competitive systems..

RATS (*see* "Enemies").

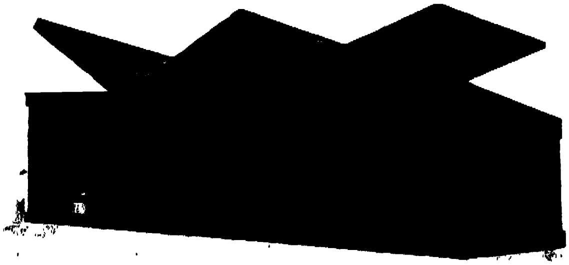
REACHY. A term applied to the upright carriage of a Game cock.

REARER (*see* "Foster-mother," and below).

REARING, ARTIFICIAL. The foundation of artificial rearing lies in an appliance generally known as a foster mother, which comprises a heated brooding chamber and one or more outer runs. The ideal foster mother is that one, the brooding chamber of which, when in use, has an equable temperature in all parts, and has no corners into which the chickens can crowd. Its heating arrangement is such as not to cause any fumes from the lamp to reach the chickens. Its floor is well off the ground so as to avoid damp, as damp is fatal to the well-being of the youngsters. Its ventilators are arranged so as to avoid currents of air playing directly upon the inmates or the lamp. The fresh air enters at the bottom and reaches the brooding chamber by means of ventilating shafts arranged in the corners; and, after becoming warm and buoyant, it escapes by way of outlets formed above the water tank or metal heat radiator forming the inner roof. The lamp box is placed outside the brooding chamber, and is well protected against fire by means of an asbestos jacket.

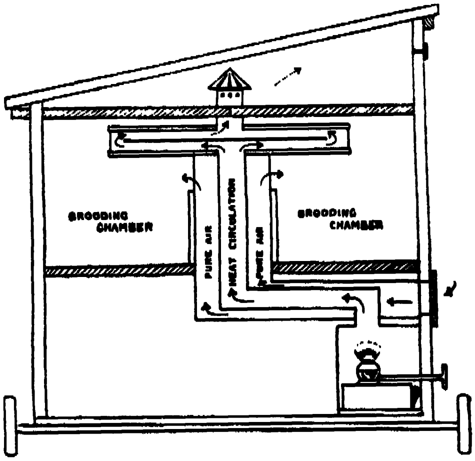
There are many styles of foster mother—too many to describe here—but a short account of the most popular types may be useful in aiding the novice to make a selection. What is known as the hot-water or tank type of foster mother is that one the brooding chamber of which is heated by means of a hot-water tank. This tank covers and forms the inner roof of the brooding chamber, and the water therein is heated by means of a petroleum lamp, the heat from which travels through a flue running round the inside of the tank, or heats a coil or small boiler fixed in the upper part of the lamp box. From the coil or boiler the heated water circulates through tubes to the tank. Another very similar type of foster mother is that whose brooding chamber is fitted with a circulating hot-water tube which runs all round and near the inner walls of the brooding chamber. The water-heating arrangement in connection with this device is similar to the coil applied to the tank system referred to above.

We will now describe a couple of foster mothers known as the hot-air types. The first of these has for its heating arrangement a hot-air tank which forms the inner roof of the brooding chamber. The air in this tank is heated by means of a petroleum lamp, the heat from which passes directly into it. In some makes of hot-air brooders the lamp flue in connection with the tank is fixed in the outer run so as to avoid fumes from the lamp reaching the chickens. In others the lamp stands in the centre of the brooding chamber, and the heat rising therefrom enters the tank by way of a hole of sufficient size formed in its bottom or lower iron plate. The heat passes between this lower plate and the upper iron plate forming the top of the tank, and escapes by way of holes formed in its corners, and therefore any fumes that may arise from the lamp are carried off. Another type of brooder, and one of the oldest types, is simply heated by means of a lamp placed in the centre of the brooding chamber, the inner roof of which is of metal and forms the heat radiator. The heat rises from the lamp, strikes the metal roof or radiator and descends to the chickens.



The "Wooden Hen" Brooder. (*Mech.*)

Each one of the above-mentioned types of foster mother has its good or bad points, according to the conditions under which it is operated. In brooders heated by means of tanks holding a great body of water, it is sometimes found a difficult matter to regulate the heat to suit climatic conditions. The great body of water must be heated up to generate sufficient warmth through the night, but on the following day should the sun break out in strong force, it is a difficult matter to lower the temperature in the brooding chamber, even though the lamp may be put out. In other words, the great body of water in the tank keeps hot too long; and the temperature in the brooding chamber rises to a point that is apt to do the chickens harm. The only way to overcome the above-mentioned fault is to have the brooding chamber fitted with sliding ventilators, so that they can be arranged to allow an escape of superfluous heat, but such ventilators must be so arranged that no current of air will play upon the chickens. The circulating hot-water tube principle of heating the brooding chamber overcomes to a very great extent the danger of overheating, as, when the lamp flame is lowered, the small body of water contained in the heating device soon cools down. The heat can also be generated quickly.



Sectional View of Hot-Air Tank Brooder.
(*Tamlin.*)

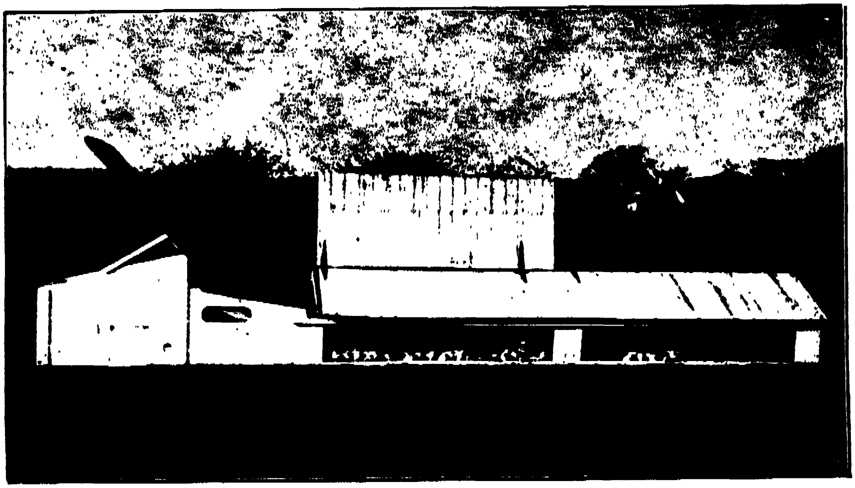
Of the two hot-air types of brooders briefly described above, the one with the tank arrangement is to be preferred owing to the fact that any fumes arising from the lamp are carried away from the brooding chamber. Many prefer the hot-air type of brooder for the reason that the heat can be raised or lowered quickly to suit climatic conditions.

Whichever type of foster mother is used, unless the heat can be generated right down to the floor of the brooding chamber, there is some serious fault in its construction. When a hen broods her chickens her body is brought in close contact with them. The heat from her body warms the ground, and the chickens nestling among her feathers are surrounded by a genial warmth. If in the brooding chamber of a foster mother the heat does not descend to the floor the chickens are likely to crowd together for warmth, and the strongest will climb on to the backs of the weakest in search of heat and either crush or suffocate them.

The most profitable chicks are generally placed in the foster mother at a time when the weather is anything but favourable for the rearing of young stock, and unless a perfectly heated brooding chamber, coupled with proper management, is used the youngsters will surely suffer, and once they are checked in growth they will never regain lost ground. During late spring and the summer months it is not so difficult to raise chickens in the foster mother, providing due attention is paid to cleanliness in the brooding chamber and the management of the heating arrangement. The one aim of the chicken rearer should be to keep his birds steadily growing right on from the day they are placed in the foster mother.

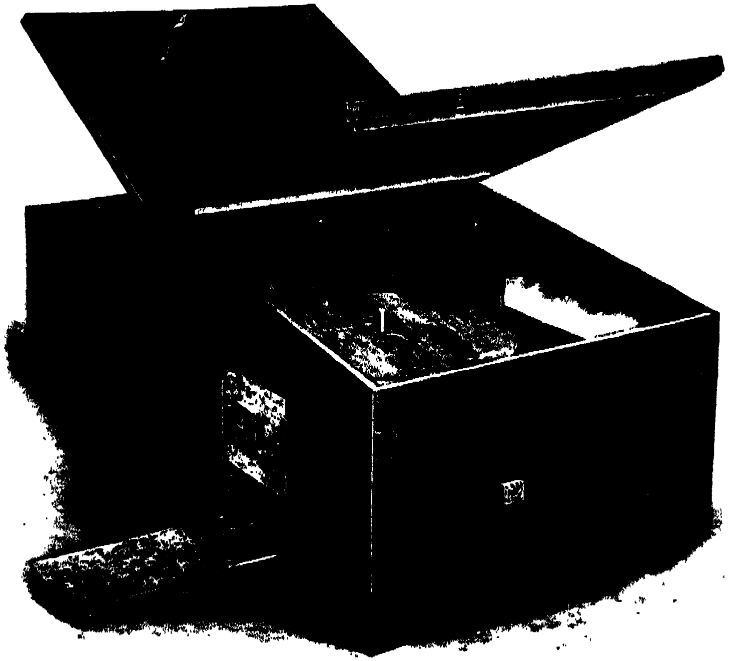
Before transferring newly hatched chickens from the incubator to the foster mother, the brooding chamber of the latter should be thoroughly cleaned, and well aired by keeping the heat up for a day or two. Brooders that are stored away during the winter months are liable to become very damp, and this damp must be driven out of them or it will play sad havoc among the young birds. After being well aired, the floor of the brooding chamber should be covered to the depth of about one inch, with peat moss litter, straw chaff, and oat culms or fine dry sand. The latter is good for summer use, while the former are good for cold weather.

The temperature of the brooding chamber should be kept as near 90 degrees as possible during the first week the chickens are in. During the second week the heat should be gradually lowered to



Hot-Air Brooder with Extended Run. (*Cyphers.*)

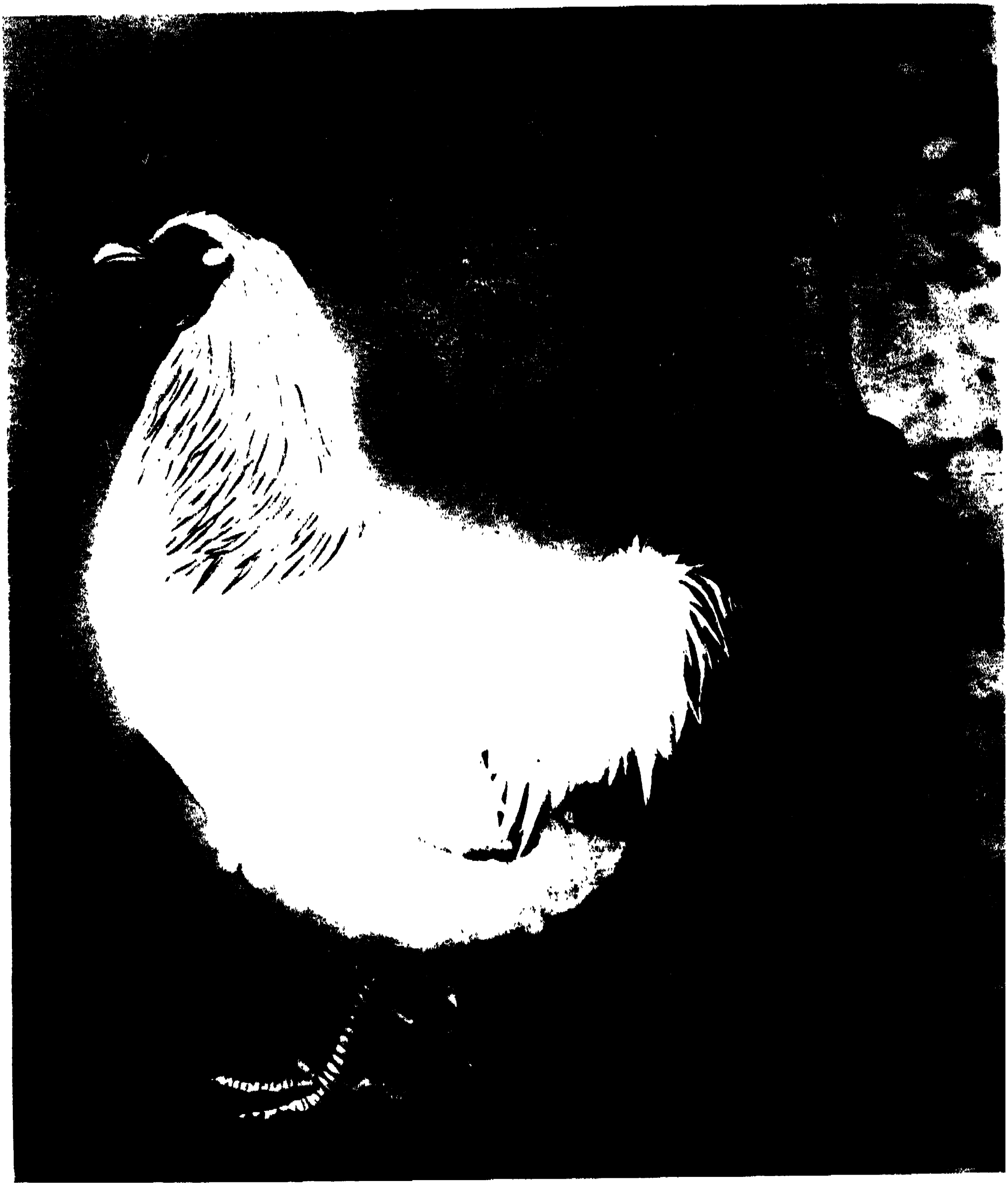
85 degrees, and during the third week to 80 degrees, while during the fourth and following weeks the chickens occupy the brooder, the heat should be kept as near 70 degrees as possible. When testing for the temperature of the brooding chamber the thermometer should not be laid upon the floor, but should be placed at least three inches above it. If the thermometer were placed upon the floor and it registered 90 degrees the temperature on a level with the heads of the chickens would probably be 100 degrees or more, with the result that many of the youngsters would either be suffocated or forced to subsequently seek the open run for cool air, and the change from a hot to a cool atmosphere would soon debilitate them. Too much heat in the brooding chamber is as bad as too little, for, providing the weather is dry, chickens can stand more cold than is generally imagined without taking harm. It is wet and windy weather that tell sorely upon the half-naked bodies of the chicks, and it is then that they must have cosy quarters in which to sleep and feed.


A Three-Apartment Outdoor Brooder—Front View. (*Cyphers.*)

The experienced hand at raising chickens artificially seldom or never uses a thermometer to test the heat of the brooding chamber. He can tell to a nicety when the temperature is too hot or too cold. When the temperature is too low the chickens will show signs of it by huddling into the corners, or around the lamp, if such is used in the chamber, and they will cry out in a plaintive manner. If the birds are too warm they will gasp for breath, and lie about the floor of the chamber with their legs spread out and their wings hanging loosely at their sides.

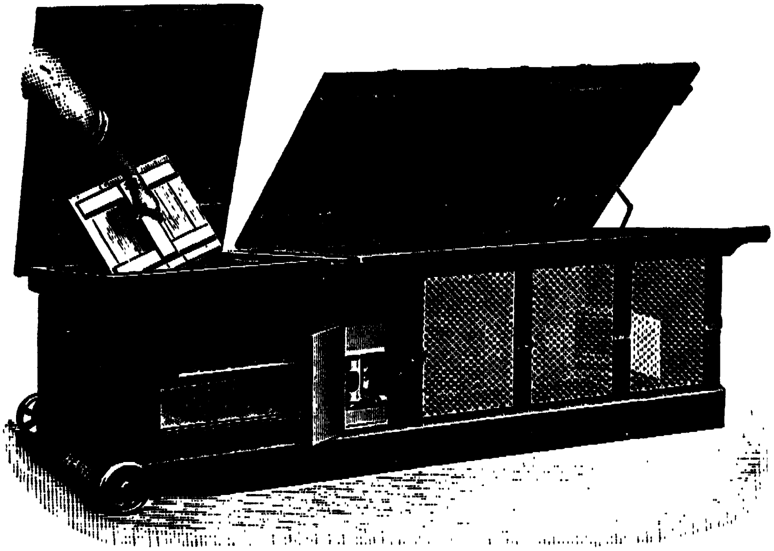
The covered run attached to the brooding chamber should be converted into a scratching shed by having chaff or oat culms laid thickly upon the floor, which should be of wood, so that when the foster mother is shifted about the litter will be retained. By scattering dry food, that is a mixture of small grains, amongst the litter the chickens should be induced to take as much exercise and fresh air as possible during those days when inclement weather prevents them from being safely run in the open. Fresh air, exercise and sunshine are the best tonics that chickens can have. No artificial heat applied to the rearing of chickens can equal that generated natu-

PLATE No. 87



Light Sussex Cock.

The property of Mr. Hubert G. Stocker, Craigweil House, Aldwick, Bognor.



Nonpareil Foster Mother and Outdoor Rearer. (*Tamlin.*)

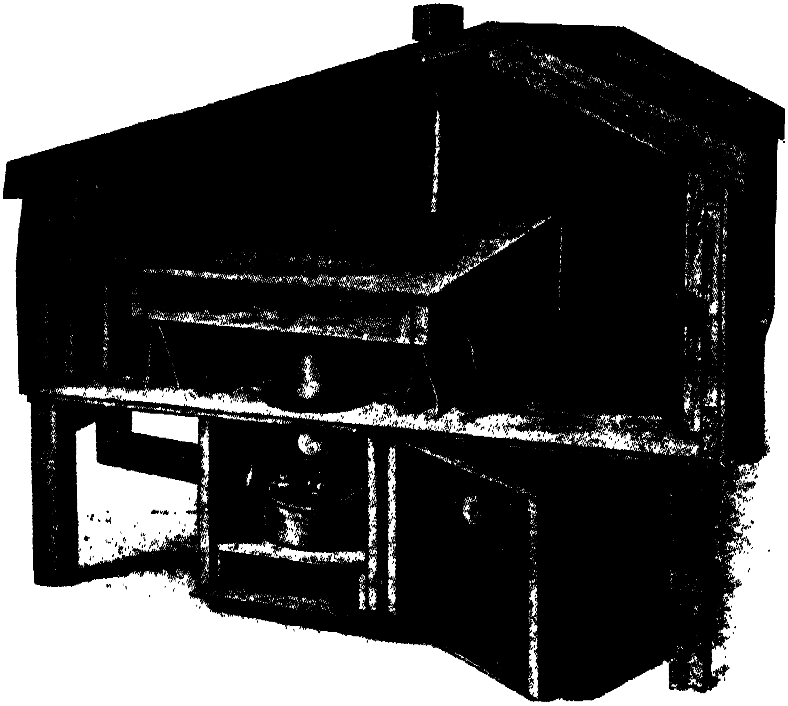
rally by outdoor exercise. Outdoor exercise keeps the blood in healthy circulation, and expands the lungs so that a greater amount of life-giving oxygen is taken into the whole circulatory system. It also develops the muscles of the body, every one being brought into action while the birds are scratching among the litter.

In the operation of the foster mother coddling and overcrowding must be rigidly avoided. There are those who imagine that the more chickens there are in the brooding chamber the warmer they will be on cold nights, and the less artificial heat they will require to keep them warm. Under such conditions the chickens may be warmer, but certainly not healthy, as overcrowding means impure air, and impure air means loss of vitality and premature disease and death. Many of the foster mothers advertised as being of 100 chick capacity should never be entrusted with more than sixty birds. It should be remembered that the chickens will grow and that the brooding chamber cannot adapt itself to their development. A brooding chamber 30 inches square will comfortably brood, and allow for the development of fifty chickens, while one 36 inches square will accommodate 80 to 100.

Thorough cleanliness must be observed in the management of the foster mother,

Indoor Brooder. (*Payne & Co., Newbury.*)

and especially does this advice apply to the heated compartment. The droppings from the chickens should be frequently removed to prevent foul air in the brooding chamber. Foul air must be rigidly avoided. Chickens are by some attendants fed in the heated chamber during the first few days that they occupy it, and such a practice is not to be condemned if the weather is very cold, as it not only gets the birds well on their food, but upon their legs also. Strict attention, however, should be paid to the removal of any food left after each meal. If food is left on the floor of the brooding chamber to be trodden upon and rendered sour under the influence of heat, it will, if consumed by the birds, cause bowel troubles. On sunny days, when the chickens can be confined to the outer run for a time, the lid of the brooding chamber should be opened so that the sun's rays may play upon its interior. Sunshine, if allowed free access to the brooder will destroy any germs of disease that may be lurking about. Chickens, when hatched and reared under artificial conditions, are seldom troubled by insect pests, that is, so long as cleanliness in the appliances used is observed. It is a good plan, before entrusting a fresh batch of chickens to the foster mother, to fumigate the brooding chamber with some sulphur, and to afterwards give it a coating of limewash. Should the chickens by any means become infested with lice they must be attended to without loss of time. Insect powder should be dusted well into the plumage, especially at the root of the tail, under the wings and on the head and neck.



Interior View of Brooder. (*Allen Poultry Co.*)

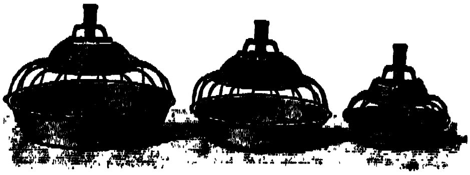
If the foster mother is operated on grass land it should be moved about daily in fine weather. If heavy rains sodden the earth the brooder should not be moved before the grass is quite dry. If moved to wet grass the chickens will be forced by cold to enter the brooding chamber, there to remain the greater part of the day—a thing undesirable, as the more fresh air the chickens can get the healthier they will be. Chickens can be successfully reared in foster mothers placed on land devoid of grass, so long as cleanliness is rigidly observed, and so long as the birds are provided with such foods as will make up for the loss of insects, grass, etc. When grass land is not available, the outer run should have a good thickness of fine dry sand placed upon its floor, and this should be frequently raked over, and replenished when signs of foulness appear. Thousands of chickens are annually raised in foster mothers placed on earth floors under open-fronted sheds during the winter months. The raisers of early chickens intended for exhibition purposes prefer a dry earth floor for the youngsters during those months when snow and sleet sodden the grass land and render it cold and damp. Placed under cover of some kind, the foster mother is not only protected from snow, sleet and biting north and east winds, but the work of attending to it and its inmates is rendered more comfortable. Should the foster mother be operated under an open-fronted shed facing the south, every opportunity should be taken on fine days of letting the chickens get as much open-air exercise as possible.

When the chickens are four, five or six weeks old, according to the time of year and the prevailing weather, they should be placed in a cold brooder, which comprises a sleeping compartment and a covered outer run. The structure should be well ventilated, but no currents of air should play directly upon its inmates. The sleeping compartment should be lofty, so as to give extra air space, and so that sufficient chickens may occupy it to make it appear rather crowded. The chickens will feel the cold somewhat during the long nights of late winter and spring, after leaving the cosy chamber of the foster mother, unless they are so housed as to be, as it were, huddled together. If the sleeping chamber of the cold brooder is too large the birds will crowd together in the corners for warmth. The outer run, which should be a covered one attached to the sleeping chamber, should have an earth floor, on the top of which should be placed peat moss litter, chaff, oat culms or any other short, clean litter in which the birds can find employment scratching about in inclement weather. The floor of the sleeping chamber should be covered to a depth of three inches with peat moss litter which should be frequently raked over, and replenished when the first suspicion of foulness arises. If the cold brooder is standing on grass land, a few stakes should be driven into the ground around and at some distance from it, and to the stakes some wire netting of a suitable width should be fixed. The enclosure will form a splendid playground for the chickens in fine weather.

Chickens that contract illness of any kind should be quickly isolated from their healthy companions, and the same remarks apply equally to chickens that are in the least weak. It is no use trying to rear weak chickens artificially, it is only a waste of time, as such birds only get trampled upon by their stronger companions and soon succumb. Weak chickens are a positive hindrance to the progress of the strong ones with which they are allowed to exist. A twist of the neck and a little hole in the earth are the best remedies for weakness in chickens, and such remedies should be resorted to unless the attendant has plenty of time to spare in dabbling with them, a thing unlikely with any poultry-man whose methods are up-to-date.

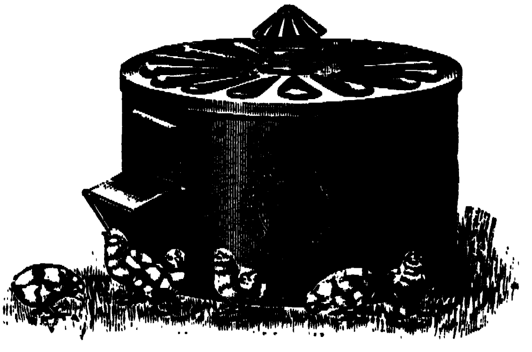
Abundance of fresh air on all favourable occasions, dryness and cleanliness in the appliances used—the latter item especially concerns foster mother lamps and brooding chambers—a keen eye, ever on the look out for illness and insect pests are the things necessary to raise healthy chickens artificially. Foods and feeding are not dealt with here, but such foods as are used, and such methods of feeding as are adopted by those who raise chickens naturally may be resorted to. Advice touching upon this subject should be sought after in the sections devoted to it.

REARING GENERALLY. CHICKENS. The present-day rearing of chickens is a much simpler process than was the case a few years ago, largely due to the wonderful improvements that have been made in brooders, coops, methods of feeding, etc., as well as to the increased knowledge of the modern poultry-keeper. The old-fashioned haphazard methods no longer hold sway, and the rearing of chickens is now regarded by the vast majority of those interested in this branch of agriculture as a business, requiring business training and business methods. It is necessary, for the purpose of this article, to note that there are two distinct methods of rearing adopted at the present moment, namely, artificial and natural. As to which method should be adopted it is difficult to say, it being very largely a question as to when the chickens are brought out. Artificial methods are essential with those hatched during the winter and early spring, for at these times broody hens are so extremely scarce, and when one is obtained it is hardly safe to trust her upon valuable eggs. Provided the birds are well attended to, well fed, and due regard is given to all the laws of breeding and health there is little to choose between the two methods so far as health and vigour are concerned.



Drinking Fountains for Young Chicks. *(Cyphers Incubator Co.)*

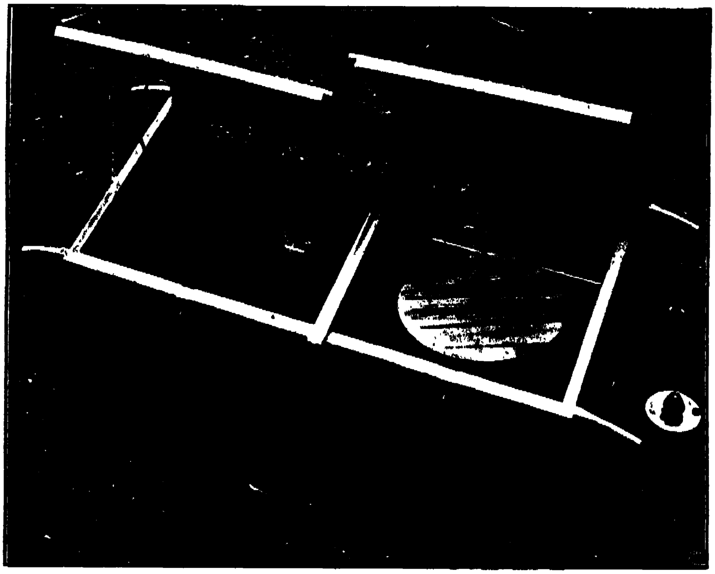
After the chickens have made their exit from the shell they should not be removed from the box or the incubator for quite twenty-four hours, until, in fact, they are perfectly dry. It is running an unnecessary risk to remove them sooner than this, as, unless they are quite dry they will be very liable to contract colds and chills, the effects of which may remain with them throughout their lives. Great care should be exercised when taking them to their new quarters, especially should the weather be wet or cold, as a sudden change in temperature frequently has an injurious effect. If the natural method of hatching has been employed, it is a good plan before removing the hen and her brood to the coop, to give her a good feed, leaving the chickens in the nest, as she will then be more likely to attend to their requirements. Some hens are exceedingly clumsy, and unless they are carefully watched they trample on and kill some of the chickens. The great danger is during the first three or four days before the chickens have become accustomed to their surroundings. Before removing the hen to her new home she should be dusted with a disinfectant powder, as successful rearing can only be insured by practising the utmost cleanliness. It is, moreover, an excellent plan to anoint the head of each chicken with a mixture composed as follows:—1 oz. mercurial ointment, 1 oz. of lard, ½ oz. of petroleum. When heated it becomes semi-fluid, and with a wooden match a single drop is applied on the top of the head. This very effectually keeps away vermin during the first three weeks or thereabouts, when, if necessary, the process may be repeated. It is surprising what a wonderful difference it makes to the health and vigour of the chickens, causing development to be considerably hastened. The coop to which the hen and her family are removed



The "Cosy" Brooder. *(Dairy Outfit Co.)*

requires to afford full protection to the inmates, to be warm, dry, free from draughts and portable, so that it may be easily moved from one place to another, thus constantly bringing fresh ground into use, a most important matter in rearing chickens. A coop is really a form of small house, and as such it requires to be well and substantially made. Its actual shape does not matter at all, provided the general principles are right. The most common kind is the lean-to, and for ordinary purposes it answers admirably. A convenient size is 24 inches square, which allows the inmates an abundance of room. The front should be about 21 inches high, sloping down to about 15 or 18 inches at the back. This form of coop has solid sides, roof and back, while the front is barred, the rods being placed about a couple of inches apart, sufficient to permit the chickens to pass between, but near enough to confine the hen. A shutter should be so arranged as to provide protection from wind and rain during bad weather, as well as from the sun during the summer months. For early rearing a coop alone is not altogether suitable, unless it can be placed beneath a shed, for if it is out in the open it means that during bad weather the chickens can procure no exercise unless they go out into the wet. It is advisable, therefore, to attach to the coop a small covered-in run, which should be about 2 feet 6 inches in length, and the same width as the coop itself, and then, however inclement the weather may be, the chickens have always a dry and comparatively warm place where they can secure the necessary exercise.

Chickens brought out in an incubator, on the other hand, must have a brooder provided for them, and many very excellent ones there are on the market at the present time. When selecting a brooder great care should be exercised in seeing where the lamp is placed, because, it is important that it should be in quite a separate chamber to that in which the chickens have to sleep. It is a mistake to coddle chickens, as this impairs their health, but at the same time they must be kept warm and absolutely free from draughts. During the first week of their occupancy the temperature within the inner compartment should be maintained at 90 degrees, during the second week at five degrees less, during the third week at 80 degrees, gradually reducing the temperature until the lamp is dispensed with altogether. These are the temperatures that should be registered after the chickens have been in for some time, as they have the natural effect of raising the heat several degrees. Exactly when artificial heat may be dispensed



Outdoor Hot-Air Brooder. *(Payne & Co., Newbury.)*

with depends upon a variety of circumstances—the vigour and health of the chickens, their rate of development, their breed, and also upon the weather. Healthy, well-grown chickens, of a hardy race, and in open weather, are generally better without heat when they are five or six weeks old, whereas, if the contrary is the case, the lamp may have to be kept burning until they are ten and even twelve weeks old. This is a matter which must be left to the common sense of the attendant, as it is quite impossible to lay down any hard and fast rules. Another point to remember in the management of a brooder is that there shall be no overcrowding, for this is one of the most serious errors that one can make; it has a very injurious effect upon the health and vigour of the birds, it increases the mortality, and makes rearing considerably more difficult. When the brooders are overstocked, the atmosphere becomes vitiated and impure, besides which the chickens are very liable to trample upon one another. The greatest cleanliness should be observed, and the brooder should be moved on to fresh ground every day, or at least every alternate day.

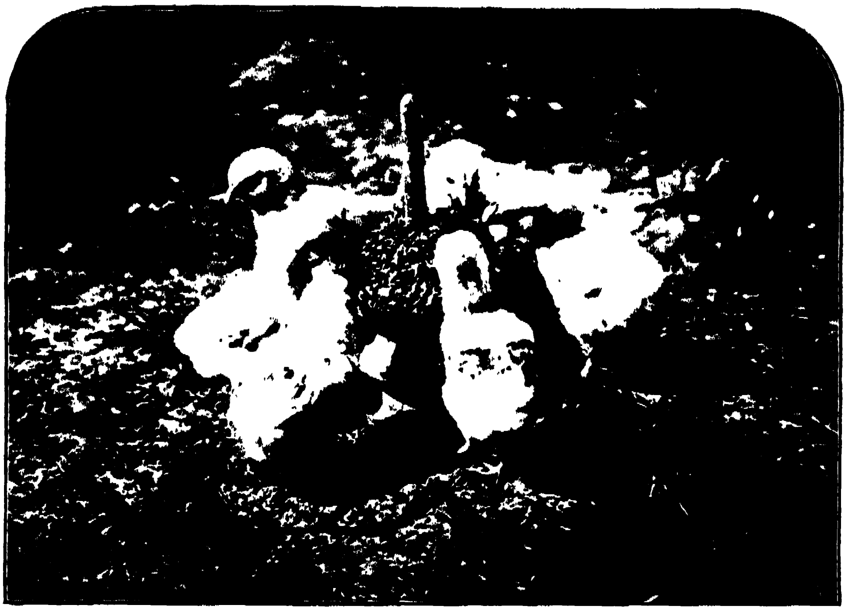
French Feeding Stick.

Showing how the food is placed

As soon as the chickens are old enough they should be removed from the hen or the brooder, as the case may be, and they should be placed into small houses, containing no perches, as it is a mistake to allow them to roost until they are about fourteen weeks old—that is, until their bones have become well set. Before this age the bones, and particularly the breast bones, are merely gristle, which bend if they come into contact with a hard, narrow perch, detracting very greatly from the appearance of the birds when killed, and consequently from their value.

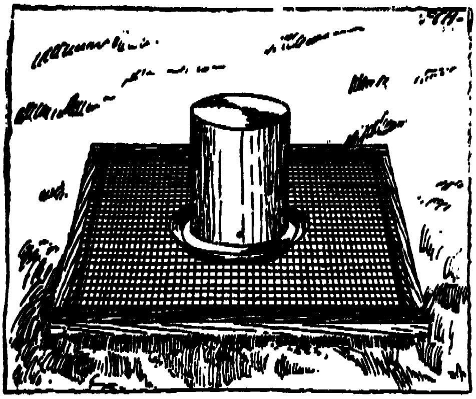
A critical stage through which all chickens have to pass is during the time they are feathering, and while the actual percentage of mortality at this stage is comparatively small, neglect on the part of the poultry-man shows itself in retarded development and stunted growth. We have known many cases in which a flock of chickens was doing excellently up to a month or six weeks, and then sickness and mopishness became apparent, and a great deal of trouble was necessary before the birds regained health and vigour. As a general rule the process of feathering takes a good deal more out of the chickens belonging to the heavy class than in the case of the non-sitters; for one thing they carry considerably more feathers, and thus more nutriment is required in their formation. The food supplied to the chickens during this stage requires to be rich in nitrogenous matter, as this is the element that goes to the formation of feathers. The importance of cleanliness in everything pertaining to the chickens cannot well be over-estimted. The birds themselves must be kept scrupulously clean and free from vermin, otherwise they will not thrive or develop nearly as well. They should be regularly dusted with a disinfectant powder, several excellent preparations of which are upon the market. The coops and brooders should be regularly whitewashed between each occupancy, and rather than the use of mere lime and water, the following mixture should be prepared:—Dissolve as much lime as possible in four gallons of water, then add half a pound of soft soap, and a pint of paraffin oil. The soap has the excellent effect of causing the whitewash to adhere to the walls, preventing it rubbing or flaking off, while the paraffin kills all insects. The water pans, the dishes for green cut bone, and, if the moist system of feeding is followed, the food troughs should be scrubbed in boiling water at least once a week. An essential factor in successful rearing is an abundance of space, and as far as one is able, the youngsters should be given plenty of freedom. It is not proposed in this article to deal with the important questions of foods and feeding, as these are dealt with under their respective headings.

——**DUCKS.** The duck-raising industry of this country was, until within the last few years, almost entirely concentrated in the counties of Buckinghamshire and Bedfordshire, comparatively little attention being devoted elsewhere to this extremely important branch of industrial poultry-keeping. Around the towns of Buckingham, Aylesbury, and Leighton Buzzard, nearly everyone was and still is, interested in duck rearing. The farmers, as a rule, maintain the stock birds, selling the eggs to the "Duckers," as the duck rearers are termed, the latter of whom undertake the rearing, fattening and marketing of the produce. So profitable is the work, however, that it is only natural it should extend to other parts of the country, and we find nowadays that prosperous duck farms exist in all parts of the country. Though the duckling industry is no longer confined to the Vale of Alyesbury and its immediate neighbourhood, yet the methods pursued there still give the best results, as, starting with birds of the



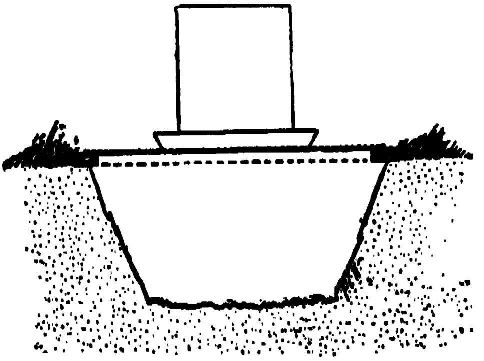
Chickens Eating from Feeding Stick.

right sort, the men of Buckinghamshire and Bedfordshire have perfected a system of rearing and fattening which is excellent in every way. A brief description of these birds, and the manner of their preparation, will doubtless interest readers, who may dismiss from their minds as unfounded the assertion so often made that there is something peculiar to the locality of these two counties which give the "Aylesbury" duckling its pre-eminence. Some of the finest birds are now produced in Oxfordshire, Lancashire, Norfolk, Suffolk, Lincolnshire and Cambridgeshire. But the two counties of Buckingham and Bedford still produce the great bulk of the early ducklings, and their methods may, therefore, be followed with advantage by those who desire to share in the high prices obtainable in the spring. The Aylesbury duck, as found in the Vale and neighbourhood, is of very ancient strain, but some time ago it was crossed with Pekin blood, in order to improve the stamina of the breed, which began to show signs of exhaustion. It is a pure white bird, with flesh-coloured bill and orange fret, and carries a large amount of breast meat, very tender, and of excellent quality, but slightly deficient in flavour as compared with that of the slower maturing breeds. It is fairly hardy and extremely precocious, as many of the fattened ducklings scale upwards of five pounds eight weeks from the date of hatching.



Device for Watering Ducklings.

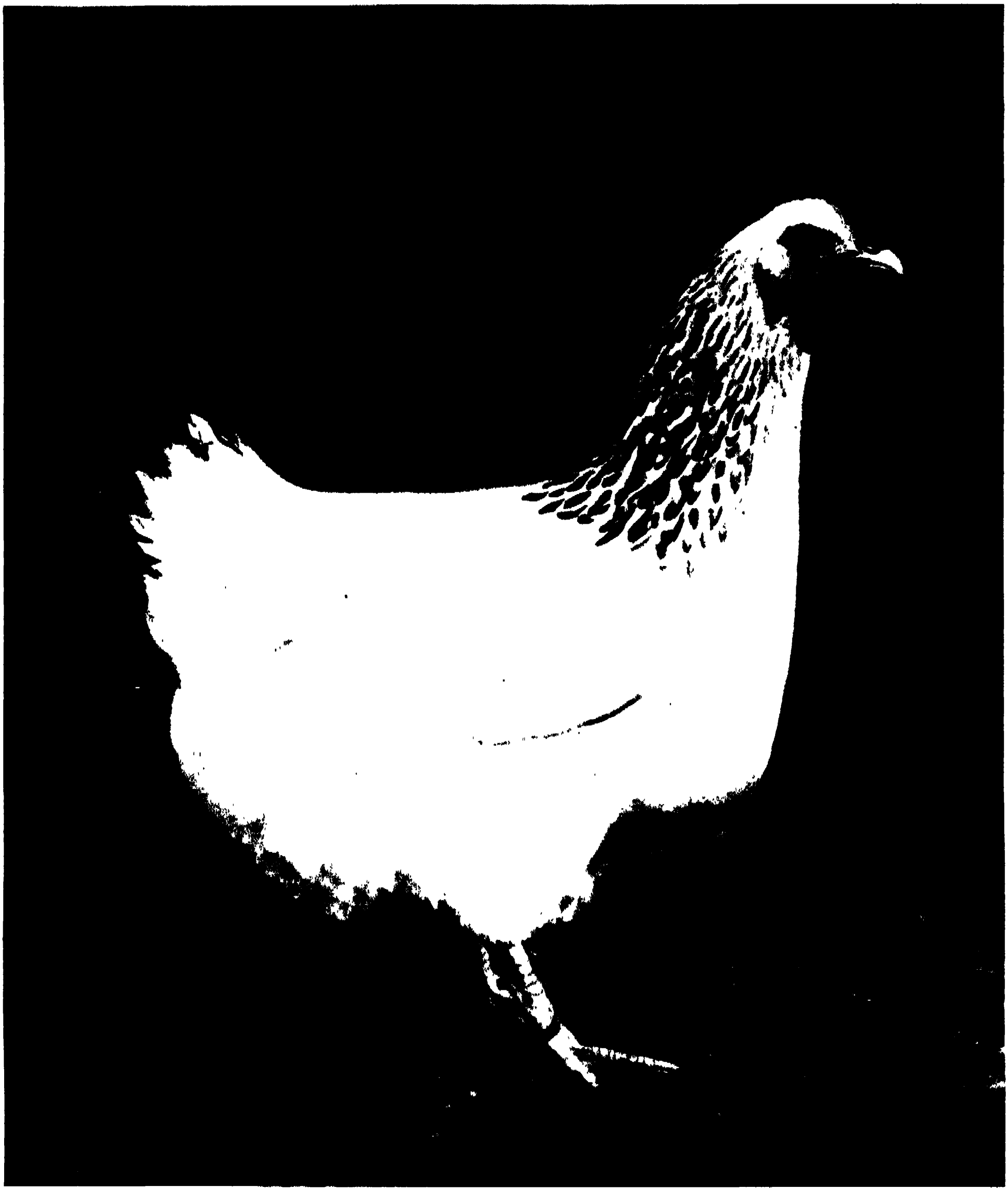
A large size drinking fountain rests on a screen frame 18 inches square. The wire is ½-inch mesh galvanised wire cloth. The screen is placed over a hole 18 inches deep in the earth run in front of the brooder house. All water slopped around the fountain runs away and the screen remains dry.



Cross section of device for watering ducklings, showing the fountain resting on the galvanised wire cloth of the screen and the hole in the ground to carry off the waste water.

If hens are available they should be used for hatching in preference to an incubator, because they are rather more satisfactory for this purpose. It must not be supposed that machines will not hatch ducklings well, but hens generally bring out a slightly larger percentage of strong ducklings. If an incubator is employed, it should be run at 102 degs. in the case of the hot-air kind, and 103 degs. in that of the hot water. It is a good plan to occasionally damp the eggs with a wet cloth immediately before the egg drawer is replaced in the one case, or before the hen goes back after feeding in the other, as duck-eggs require an abundance of moisture, without which the inner and outer membranes (the two thin skins adhering to the shells) become thick and tough, causing the youngsters difficulty in piercing, especially as their beaks are blunt and quite soft. Duck eggs take about twenty-eight days to incubate, but the exact time depends to some extent on the age of the eggs, the fresher they are when first placed into the machine the sooner do they hatch. If they are put in the egg-drawer within

PLATE NO. 88



Light Sussex Hen.

The property of Mr. Hubert G. Stocker, Craigweil House, Aldwick, Bognor.

twenty-four hours of being laid the ducklings should make their appearance about the twenty-sixth day; if on the contrary, the eggs are a week or more old they will probably not hatch until quite the thirtieth day.

The ducklings should remain under the hen or in the drying box of the incubator for about twenty-four hours after hatching, for if they are removed while at all damp, grave danger is run of their receiving a chill, the effects of which may very seriously retard their growth, and give them a check from which they will never recover. Unlike chickens, ducklings require very little brooding, and provided the weather is not too severe they may be given their independence when four days to a week old. As a matter of fact, this is preferable to keeping them with the hen, as they are extremely hardy and seem to grow faster and stronger if placed by themselves. A large, roomy coop should be provided for their accommodation, well and substantially made and quite free from draughts. The coop should rest on the ground, as a wooden floor has a very bad effect, causing cramp and leg weakness. Ducklings that are intended for killing should be allowed very little exercise, as the less they work their limbs the more rapidly do they put on flesh. They should not be allowed access to swimming water, unless it is the day previous to killing, when a swim cleanses their feathers. Rapid development is of the utmost importance, as the sooner they are ready for market the larger the profit. The land over which they run is liberated, food and labour are economised, but most important of all a higher price is procurable for the produce once the market has reached its maximum, a week or ten days sometimes making as much as a shilling or eighteenpence difference in the price. Ducklings that are to be retained for stock purposes the following season should, on the contrary, be encouraged to take as much exercise as they will, and should have access to water immediately they are sufficiently large, as only in this manner will they develop strong frames and sound constitutions. Fresh litter should be provided as often as necessary, as ducklings are somewhat prone to dirtiness. The birds for killing should be kept altogether in their shed, but those for stock purposes should be liberated during the day and allowed to wander far and wide.

The greatest care must be exercised in the selection of the food supplied to the ducklings during the first few weeks, as much of the ultimate success attained depends upon their treatment during this time. It is no uncommon thing for the "duckers" in the Aylesbury district to kill ducklings eight weeks old weighing four and-a-half to five and-a-half lbs. For the first few days after hatching they are fed upon hard-boiled eggs chopped up finely, and mixed with breadcrumbs or biscuit meal moistened with skim milk or water. After three days of this feeding boiled rice is given to them, and also barley-meal. Barley-meal is rather too heating alone, but when mixed with toppings it forms an excellent food. Referring to the rice, it is useless to give it to the ducklings in a raw state, it should be cooked, in order that it may be more easily assimilated. The correct way of preparing it is as follows: To one quart of chicken-rice add three quarts of water, and allow this to simmer, not boil, until the rice has absorbed all the water, when an excellent rice pudding will be made. For the last three or four weeks before killing the rice (with one-fourth its bulk of tallow greaves) will form the staple food, and before this time it should be given alternately with the barley and toppings. Rice has the further advantage, besides being an excellent food, of being very cheap, and there is no more useful or suitable food upon which to rear ducklings. During the first fortnight of their lives, ducklings should be fed four times a day, and after this period three times is sufficient. The meals should be given at regular intervals, the first about 6-30 in the morning, the second about mid-day, and the third about 5-30 p.m. or 6 p.m.

——**GEESE.** The popularity of the goose, both among poultry-keepers and among the purchasing public, has been steadily on the wane during the last few years. There are several reasons to account for this state of affairs, chief among which is the fact that the public taste has undergone a change, and instead of the goose being regarded as *the* dish upon Christmas Day we find that the turkey meets with greater favour. Just why this should be so it is difficult to say; probably it is more a question of fancy than anything else, and it is possible that within the space of a few years they may regain to some extent their lost popularity. As the demand for geese declined and that for turkeys rose there was naturally a shrinkage in the price of the former, and this explains undoubtedly why it is that farmers and poultry-keepers generally regard geese as the least profitable of all poultry. That this is a mistaken impression, however, many can testify, for there is no class of poultry so easy to rear, so hardy, or so cheap to bring to killing age. The statement was recently made by a well-known goose raiser in the East of England that he reckoned he made about 3½d. or 4d. per lb. on every bird he reared and marketed. If this is so, then more attention might well be paid to this branch of industrial poultry-keeping.

It is not everyone who should attempt this work, as unless the conditions are favourable, it is next to useless trying to make goose raising profitable. In the first place it is essential that geese shall have an abundance of space, as if they are cramped they grow slowly, they taint the soil and they consume a tremendous amount of prepared food. It is necessary to bear the last point always in mind when keeping geese, as they are very large eaters, and unless the utmost economy be practised in the feeding from the very first they will quickly consume all the profit that is likely to ultimately accrue. Geese, moreover, cannot thrive at all well in confinement, and they must have plenty of space in which to wander about. Those that possess only a few acres, therefore, should leave this branch severely alone. Upon waste or common land geese thrive well, and there are thousands of acres scattered up and down the country, put to no use at the present time, that could easily maintain large flocks of geese, with benefit both to the birds and to the land. The improvement that geese make in a pasture is very remarkable indeed; they encourage the finer and more succulent grasses, and discourage the coarse. We have known cases in which a very poor piece of land, practically waste ground, upon which scarcely anything would grow, has been heavily stocked with geese, and converted into a tolerably good pasture within the space of a few years. While poor land answers well for geese, a good meadow is decidedly preferable; not that the birds themselves are any the better, or grow the quicker, but so great a saving in the food can be effected.

As a general rule young geese commence to lay about March or early April, and although for some reasons it is not altogether advisable to use very young birds, yet if early eggs are wanted it will be necessary to depend very largely upon young birds. When the goslings are merely for killing and not for retaining for stock purposes, this plan answers well, but it is unwise, on the other hand, to produce future breeding stock from very young parents. As the goose eggs are laid they should be removed, otherwise, when about fifteen eggs have been produced the goose will want to sit. When regularly removed every day, however, she should lay quite double this number. The early eggs should be placed under large hens of the Brahma or Cochin type, four being allowed to each hen. The period of incubation is thirty days, but if the eggs are quite fresh when put down the goslings frequently make their appearance on the twenty-ninth day. While the goose is sitting she should be disturbed as little as possible, and if some water and food are placed near her she will come off for feeding once a day. Sometimes it is found that the goose—and this equally applies to the hens—will not come off the nest for feeding, and when this is the case she should be made to. When the eggs are not cooled every day, it is found that the results are not so good, the young birds being less vigorous and hardy. Cooling increases and strengthens the vital force. Therefore, when it is found that the hen refuses to quit her eggs she should be lifted off, and made to stay away for from ten to twenty minutes, varying with the temperature outside. If the eggs are being incubated in a shed, or if the weather is dry, it is necessary to regularly damp them, as otherwise the inner and outer membranes (the two skins adhering to the shell), become extremely tough and hard, so much so in fact that often the gosling is unable to make its way out, its beak being very soft and blunt. There are two or three causes of this hardening of the membranes, but one is that there has been insufficient moisture supplied to the egg. If the plan of damping the eggs during the first three weeks, and dipping them for the remaining nine days, is carried out, it is supposed by some that better results are obtained. This damping or dipping should be done immediately before the bird is put back on to the nest, and in this case the eggs do not require to be dried. The goslings, after hatching, should be allowed to remain in the nest for twenty-four hours, until quite rested after the fatigue of breaking their way out of the shell, and until they are perfectly dry.

Goslings are the easiest to rear of all poultry, entailing very little trouble; after the first few days of their lives, in fact, they are able to look after themselves, securing the major portion of their own food. This does not mean, however, that they can be neglected; as a matter of fact no other race of poultry responds so readily to good treatment. Unlike chickens, goslings require but little brooding, and after the first two or three days they may be removed from their mother, as by this time they are able to dispense with heat. The coop in which they are placed should be large and roomy, dry, well ventilated, but not draughty. The ground itself should form the floor, as it is a mistake to allow them to sleep upon boards; a wooden floor to the coop is very liable indeed to cause cramp, which with leg weakness, are the chief complaints from which goslings suffer. Early in the season, when the ground is probably damp, the coop should be placed beneath a cart shed or in a large, light barn; later in the year it is better in the open, under the lee of a hedge or wood. During the first ten days or a fortnight the goslings should not be allowed full liberty, as they are very liable in this case to wander away from home and, becoming fatigued, to die of exhaustion. A small run should therefore be placed in front of the coop, which keeps the birds confined within a limited area. After a fortnight it may be removed, and the goslings allowed full freedom to wander about, as only in this manner can they grow healthy and strong, or develop large and stout frames.

The feeding plays an important part in the ultimate success achieved, and while it has been stated above that cheap foods must be used, this does not imply that the birds should be neglected or underfed. During the spring months, when the goslings are just hatched, eggs are so cheap that it is a good plan for the first few days to feed them upon hard-boiled eggs chopped up quite finely, mixed with biscuit meal, and moistened with sweet skim milk. After four or five days the eggs may be discontinued, and the birds fed only on cooked food, mixed with hot water. It is as well to vary the food as far as possible, as variation in feeding is one of the secrets of success. Wheat is excellent, but should be scalded, and not given raw; and a good way to give it is to mix it with barley-meal or ground oats. Middlings should also be given in small quantities, and if mixed with an equal amount of barley-meal or ground oats it makes a very good food. At eight or ten weeks the goslings are old enough to take whole grain. Tail wheat is suitable for the purpose, but not barley and oats, as these have such hard husks. As it is desired to build up a strong frame, bone meal should be supplied to the birds, and it can be bought cheaply from many firms. A fact not always realized with regard to geese is that they are grazing birds, and they will, if allowed, almost support themselves upon the grass that they are able to obtain. Onions and dandelion leaves are useful for rearing and, if mixed in small quantities with the food, the goslings will benefit and will, moreover, eat their food with greater relish. After harvest it is a good plan to allow the birds the run of the stubble, where they are able to pick up a large amount of natural food. In some parts of the country it is the custom to send a boy out each morning with a flock of geese, which he has to attend to all day, taking them from field to field, and returning with them at night. One lad can look after a large number, so that the question of labour need scarcely be considered. All that the birds require in addition to what they get for themselves is a little meal in the morning before they go out. In some parts of Norfolk, the centre of this trade, it is customary to hurdle the geese upon roots in the same manner as sheep; it is stated that they eat the roots off quite as cleanly as the sheep, and more important still, they do as much good to the land.

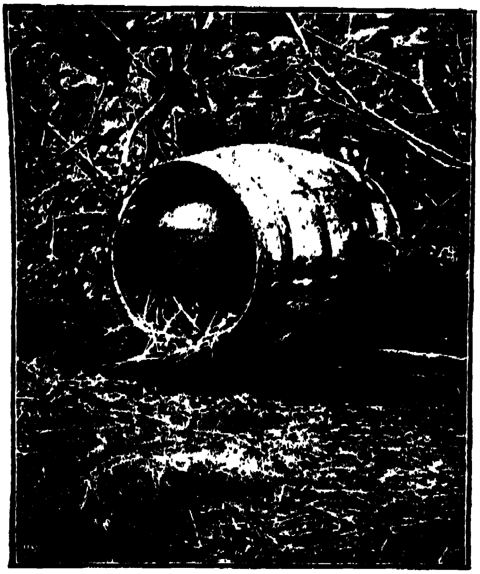
——**TURKEYS.** It is rather unfortunate that turkeys have earned for themselves the reputation of being delicate and involving considerable difficulty in rearing. While it is true that these birds are not as hardy or as vigorous as many other races of fowls, their delicacy is greatly exaggerated, for provided the conditions are favourable and the chickens are looked after well, there is really not a great difficulty to rear them successfully. There are several reasons to account for the common delicacy of turkey chickens. In the first place the conditions under which the birds are often called upon to live are quite unsuitable; maybe the place is low-lying and damp, or very cold and exposed. Of these two evils the former is by far the greater. There is no class of poultry so easily influenced by their surroundings as turkeys, and the rearing of them is rendered extremely difficult if the soil, climate and location are unfavourable. Another reason of their delicacy is that very young birds are frequently employed as breeders. Turkeys do not reach their full maturity till they are three years old, and if, therefore, birds are used in their first season they are much too young, and can only produce unsatisfactory stock. It is important, too, that the stock birds shall be unrelated, as related parents rarely produce healthy or vigorous offspring.

Turkey hens generally commence to lay about April or early May, and as the eggs are produced they should be removed from the nest, storing them in a cool place until they are required. They should be kept at as even a temperature as possible, preferably about 45 degrees. The artificial method of hatching is unsuitable for turkey eggs, although it has often been tried. Just exactly why incubators do not answer it is difficult to say, but the fact remains that hens achieve much better results. In the former case the inner and outer membranes seem to become so hard and tough, that the chicken experiences the utmost difficulty in breaking its way through. If the weather is very dry, some think it a good plan to occasionally damp the eggs, as this has the effect of softening these thin skins, making the exit of the chicken less arduous. When the turkey hen evinces a desire to sit she should be placed apart from the other birds, kept in semi-darkness, and disturbed as little as possible. It is important to see, however, that she comes off her eggs once every day, as a "close sitter is a bad sitter," causing the chickens to be weakly and entailing a good deal of extra trouble to rear successfully. The length of time she should remain away from the eggs depends upon the weather, and when it is cold five minutes is sufficient, while, when it is warm twenty minutes is none too long. The turkey hen requires a large sitting box, so that she may not be cramped. If the nest box is to be placed in a shed, wood half an inch in thickness will be sufficient, but if it has to be put in the open, it must be twice this thickness. It is best made of four solid sides, and a top, but no bottom. One of the sides should be hinged so as to form a door, by means of which the hen can come on and off. One reason for recommending no floor to the nest box is for the sake of cleanliness, as if there is a floor it cannot be cleaned nearly so well. Should there be a danger from rats or other vermin, the bottom may be covered with small mesh wire netting, and the best plan is to have it on a frame, so that when the box is lifted up the wire netting remains. The box should be placed on a layer of damp earth, three or four inches in depth; inside the box should be placed some more earth, and this should be hollowed out in the form of a saucer, upon which a little straw should be put. Oat straw is the most suitable, as barley and wheat are a trifle hard. The straw should be well rubbed in the hands, so as to soften it somewhat. The reason for making the nest in the form of a saucer is that no eggs will be able to roll into the corners, thus getting chilled. It is often stated that it is a mistake to interfere at all with

Turkey Hen, with Natural Nest.

the hen during the month of incubation, and while this is true in a sense, the nest should be examined every day to see that there are no broken eggs. On the seventh day the eggs should be tested for fertility and the clear ones removed.

On no account whatever should the chickens be removed from the nest before they are quite dry. If they are they are almost certain to catch a cold, which may have the most serious consequences, the ill-effects remaining with them throughout their lives. At the end of about twenty-four or thirty-six hours they should be taken to their new quarters, consisting of a large and roomy coop, well-made and one that can afford them protection from wind, rain, and unwelcome visitors. For early work it is risky to put the coop out in the open, and if such a place is available, it should be put under a cart shed or in a light and well-ventilated barn. When out in the open-air the chickens are liable to colds, etc., which may seriously affect their growth and development. The youngsters must at all costs be kept away from long wet grass, and thus there should be some place where they can secure the exercise which is so essential a factor towards health and vigour. A double form of coop, one consisting of a coop with a covered-in run attached answers the purpose fairly well, but a single coop in a barn or cart-shed is better still.



A Convenient "Barrel-nest" for Turkeys.

The dry system of feeding is not suitable for turkey chickens, and the moist method is the one invariably adopted. There have been a few experiments on the dry feeding as regards turkeys, but it is too early as yet to draw many conclusions from these tests. No food should be supplied to the chickens during the first twenty-four hours after their exit from the shell. when, at the end of this time, they should be given some hard-boiled eggs, chopped up finely and mixed with bread crumbs or biscuit meal, preferably the latter. This is moistened with water or milk, and remains the chief food for three or four days. Infertile eggs answer excellently for the purpose. If the chickens are not thriving particularly well the eggs may be continued for a few days longer, after which time the biscuit meal forms the chief food. In order to provide a variety, so necessary in successfully rearing all classes of poultry, a mixture of barley meal and ground oats, or barley meal and middlings should be supplied. Occasionally a small feed of boiled rice will be found beneficial, while oatmeal, well soaked, is an excellent food. It requires careful preparation, otherwise it may prove dangerous. It should be soaked in boiling water until every particle is well swollen out. Whatever food is employed it is essential that it shall be given in an almost dry condition, crumbly moist it is termed, as when sloppy it has an ill effect upon the birds. When turkeys are about three weeks old some whole grain may be supplied; small or cracked wheat, buckwheat, or any of the small seeds. Green food is essential for turkey chickens, and from the very first a little should be supplied, preferably chopped dandelion or onion. Fresh water and grit are likewise necessary. Turkey chickens possess extremely small crops, and they require to be fed more frequently than ordinary birds. The first meal of the day should be given as early as possible in the morning and the last one as late as possible.

The process known as "shooting the red" takes place when the chicks are about eight weeks old, and after this time they are quite hardy. During this period, which is the most critical of their lives, they lose their appetities, and appear weakly and wretched for two or three days. During this time meat must be supplied to them in fairly large quantities, and they must be kept in a warm room at night, quite free from draughts. Especially important is it that they shall be kept from all wet, and should the weather be unfavourable they should remain under shelter all day. If carefully attended to during this period they will speedily recover and become as hardy and as strong as ordinary chickens.

——**GUINEA FOWL.** At certain seasons of the year there is an excellent demand at good prices for Guinea chickens, and this is a branch that might advantageously be taken up by those who possess plenty of space. It is little or no use attempting to rear Guinea chickens in close confinement, for under such conditions they rarely prove satisfactory. Guinea Fowls are of an extremely roving disposition, and during the day wander great distances in search of food, but they invariably return at night to their homes. They are not wild in the strict sense of the term, but, rather, are great wanderers, and real success will never be achieved unless they have full freedom to roam far and wide over arable land and pasture alike. When the conditions are at all favourable little difficulty is experienced in rearing the chickens, and they very soon learn to look after themselves to a great extent. The most critical period of their lives is during the first few weeks after hatching, but once they are successfully over this they involve extremely little trouble.

The average number of eggs laid by a Guinea hen is about ninety to one hundred per annum, though there is, of course, a good deal of variation in this respect. We have known instances in which an individual hen has produced as many as 135, but such birds are exceedingly rare. Laying usually commences about April or May, and the hens almost invariably steal their nests, and frequently the utmost difficulty is experienced in discovering where the eggs have been laid. It is almost impossible to persuade the hens to sit in boxes or specially prepared places; in fact, if they do sit for a while they generally forsake their eggs before the period of incubation is concluded. There is no harm, however, in allowing the hens to select their own spot for sitting, because they always choose a suitable place, where they are generally fairly safe from foxes or other pests. It is a good plan, if one is able to find the eggs, to regularly remove them as laid, taking none, however, until there are several in the nest. If the hen thinks her nest has been discovered she will probably forsake it altogether, and select another, which she conceals with the most sedulous care. When there are half-a-dozen eggs or so in the nest, one may be removed each day without discovery. If the eggs are allowed to remain, when the hen has laid thirteen or fifteen she will want to sit, but if they are removed she will produce a great many more. The early eggs should be given to ordinary hens, as Guinea Fowls are usually very late in going broody. If they want to sit they should be permitted to do so, as they nearly always prove faithful sitters and careful mothers. The period of incubation is from twenty-five to twenty-nine days. Unlike other classes of poultry, Guinea Fowls are monogamous in habit, and as many males as females must therefore be kept.

The crops of Guinea chickens are very small indeed, and it is necessary to feed them more frequently than ordinary chickens. About every two hours during the first week the youngsters should be fed, the first meal being supplied at 6-30 or 7 a.m., and the last at 8-30 or 9 p.m. No food at all is needed during the first twenty-four or thirty-six hours, as what remains of the yolk-sac is absorbed into the body of the chicken immediately before it makes its exit from the shell, and this contains sufficient nutriment to sustain the chicken for the time named. It is foolish to try and force the birds to eat before this time, as if they do it is more than likely to cause a derangement of the bowels. The first feed should consist of hard-boiled eggs chopped up finely, mixed with biscuit meal and moistened with sweet skim milk or water. At the end of the first week, biscuit meal alone is sufficient. Other suitable foods, in order to make a variation, so important a factor in successful rearing, are ground oats, barley meal, oatmeal, and boiled rice. Whatever is given should be fairly dry and not sloppy, although at the same time, every particle of food requires to be thoroughly swollen out. Plenty of animal food is necessary; a piece of raw meat, or some maggots' eggs, answering well. At the end of a month or six weeks, when the chickens have passed the critical stage, a cheaper diet may be employed. The chicken meal may be dispensed with altogether, and barley meal and ground oats used instead. Small grains, particularly those without husks, may be used occasionally. When the chickens are eight to ten weeks old, they are very little trouble, and require practically no attention, being able to almost look after themselves. They can, moreover, procure a large part of their own food, provided the soil upon which the birds are running is fairly rich in animal and vegetable foods. Plenty of green stuff, grit, and fresh drinking water are essential.

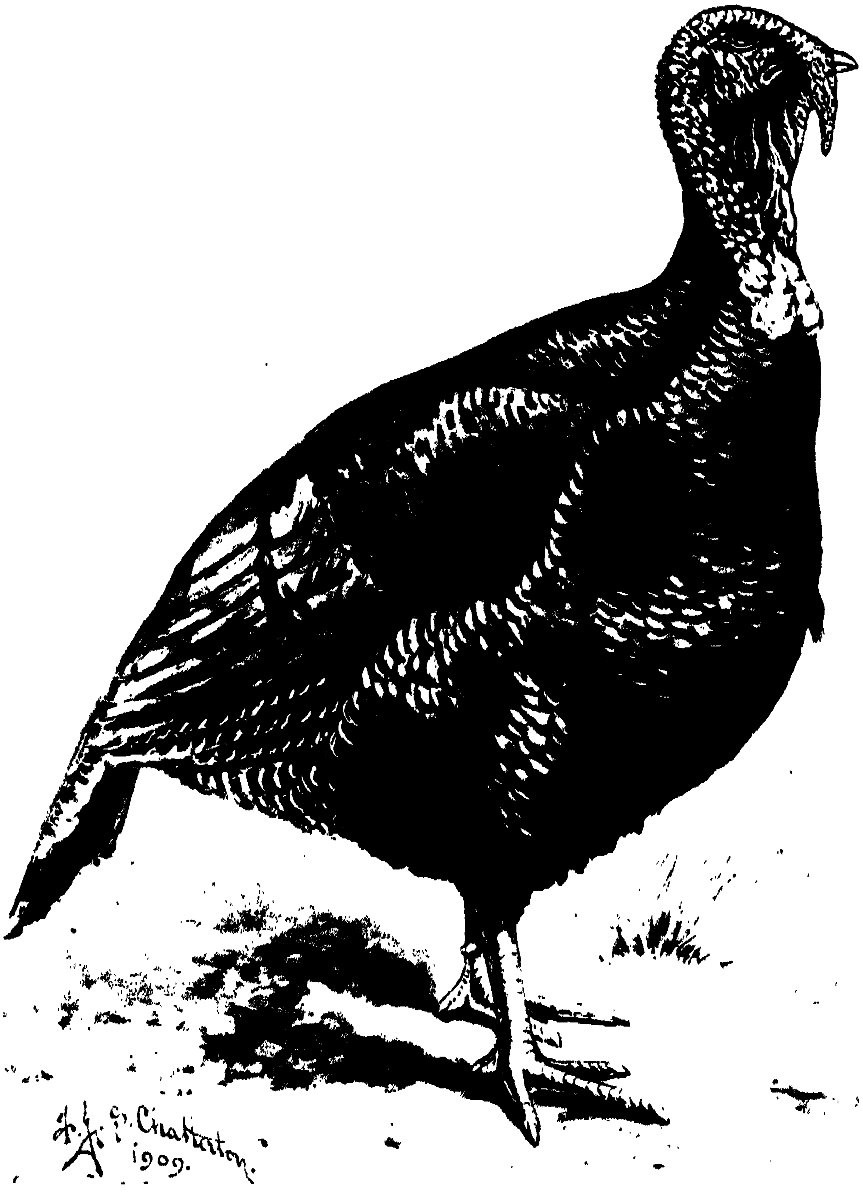
The edible qualities of the Guinea Fowl are extremely good, the meat resembling somewhat closely that of a pheasant. The body is plump and well-proportioned, while the bones are small. There is no advantage in fattening Guinea Fowls artificially; in fact such a process does them more harm than good. Prices for well-prepared specimens range high, and they are mostly disposed of among the well-to-do, there rarely being any difficulty in obtaining, on the English market, from 3s. to 4s. each. Although costing seemingly a good deal, a Guinea Fowl is really a cheap dish, as it carries so large an amount of flesh, and so small an amount of bone and offal. During the breeding season there is a fairly ready sale for the eggs at about 2s. 6d. to 3s. 6d. a dozen, and this side of the Industry might with advantage be studied. There is always a very good demand for Guinea Fowls' eggs for consumption, and they are a great delicacy. The price of such averages about 1½d. each.

RECORDING NESTS (*see* "Nests").

REDCAP. Known for many years as the Mooney and under other names in Lancashire, Yorkshire and Derbyshire, this breed has now a name of its own, and is generally recognised as one of the few truly English varieties of poultry. Little advertised as it has been, the Redcap is none the less a far from despicable representative of our native farmyard breeds; as a matter of fact, it is probably one of the most useful of our old-fashioned country fowls, of which the Sussex and the Dorking are the best known.

Exactly when the Redcap was originated it would be quite impossible to say. This, it must be remembered, is one of those breeds that originate by gradual process from a local and more or less mongrel race; there is no artificial selection, no sorting out or deliberate

PLATE No. 89



American Mammoth Bronze Turkey Cock.

(*Property of Mr. Thomas Abbott, Norfolk Live Stock and Poultry Farm, Wymondham, Norfolk*).

Winner of 1st Crystal Palace, 1st York, 1st Aberdeen, etc.

crossing. The Redcap is, and has for years been, the common farmyard stock of Derbyshire and South Yorkshire. It has constituted itself.

From the appearance and characteristics of the breed we need not for a moment doubt that the old English Game plays a prominent part in its composition. If we look further for another component, the Gold-Spangled Hamburgh immediately presents itself, and although the writer considers there was at least a third cross, we now have quite enough to convince us of at least two of its antecedents.

Of the breed from an exhibition point of view, little need be said. It is not popular in the Fancy, there is no likelihood of its being popular, and it is doubtful whether such popularity would do it any good. Of course, as the name denotes, the red cap, *i.e.*, comb, is the characteristic feature. The " cap " is shaped like the comb of a Hamburgh, but is much larger and should possess a number of " points," evenly distributed, and a rather short outstanding leader. Often these enormous rose combs are positively unsightly, and when too large the birds carrying them are practically useless for breeding; they must be dubbed. The plumage is dark red with spangles similar to those on a Gold-Spangled Hamburgh, but not of such good shape nor of such clear, golden colour. In the cock the hackles are striped with black, and the under parts and tail are also black. The hens are spangled all over. The shape and carriage are distinctly suggestive of the Old English Game Fowl.

It is because of its unquestionable practical qualities, however, that the Redcap calls for, and deserves, the notice of all utility breeders. Primarily it is a farmer's fowl, and every good quality it possesses—prolificacy, extreme hardihood, fair table properties—fit it for his purposes and his demands. The writer has seen the Redcap in its native surroundings, on sparse, wind-swept hillsides in the Peak district; and again he has seen it on the sheltered lands of a mild Hampshire valley. In both those situations it was thriving, and in each case the farmer-owner had only good to say of the Redcap as a practical breed.

These fowls are really great layers. One can tell this almost at a glance by their keen active appearance. A well-known authority can speak to a definite record of a pullet laying 106 eggs in 107 days, and 220 eggs in the course of twelve months. This is great laying, but it is probably not a record for the Redcap; and always it must be remembered that the breed has never been specially selected for laying qualities or indeed for any other utility point. The eggs are white in colour and of uniformly good size, and the hens are non-sitters.

As a table fowl the Redcap is not to be despised. It is small and light of frame, and if picked up straight away from the farmyard will not be found to carry much flesh. If previously fattened up, however, at killing it will be found fairly plump. The meat is of exceedingly good flavour, possessing much of the quality of the Old English Game fowl and the colour of the legs being slate, there is nothing to prevent a decent price being obtained at a fair market. It is an active, ceaseless forager. Not only does this activity assist egg production, but it materially reduces the food bill and thus also the cost of keep. In any case the Redcap is a small bird requiring comparatively little food, and in summer one good meal a day is quite enough for a farm flock. As has been already stated the breed is about the hardiest imaginable, capable of standing practically any conceivable kind of weather, and that fact alone may well commend it to the good opinion of the agricultural community. (*See Plate No.* 85.)

RED FOWL-MITE (*see* "Parasites").

REGULATION OF HEAT (*see* " Incubators ").

REVERSION (*see* "Heredity").

RHEUMATISM. Rheumatism must be carefully distinguished from cramp, although, as a matter of fact, cramp and rheumatism are frequently used as interchangeable terms. Strictly rheumatism is a term applicable to full-grown birds, whilst cramp is the term applicable to chickens. Rheumatism is closely allied to gout, and when a bird has been suffering from rheumatism brought about by being kept under conditions that induce rheumatic trouble, certain of its joints become centres of that trouble, and then gouty deposits begin to form. These deposits at the joints are due to the attraction of the impurities of the blood *to the rheumatic centres. There is no cure for gout in poultry, though it can be foreseen and prevented. Rheumatism* would never occur if poultry were kept under proper conditions, except, indeed, amongst aged birds, which no utility poultry-keeper ought to have in his possession, because poultry do not pay when they are more than three years old. The treatment for rheumatism consists in giving an occasional capsule of salicylate of soda, which has a marvellous effect in all cases of ague and rheumatic complaints generally. At the same time apply externally some good brisk stimulating liniment. Poultry which are rheumaticky are scarcely worth keeping; but care should be taken to distinguish between rheumatism and the ovarian cramp referred to under "Egg Organs."

RHODE ISLAND RED. That the Rhode Island Red is the most popular fowl of the United States to-day, no well-posted poultry-man will deny, and its reputation is fast spreading to all parts of the world. There has seldom been a breed of fowls that has been originated on the same sound principles as the Reds, as they are what is known as an out-bred breed, and the result of many years' practical out-breeding by the poultry-raisers of Rhode Island, where the main object is to produce the most eggs and best market fowls at the least expense and trouble. Many years ago these farmers realized that the Red cock was the vigorous cock, and produced the strongest fertility in their eggs, and, consequently, produced the strongest chicks, which would live, regardless of exposure and neglect; so, after many years of continual breeding from different styles of Red cocks, the whole flock took some resemblance to an established breed, which was later perfected into the breed as it now exists.

The only valid objection that can be raised against the Reds is the fact that some strains do not breed true to colour; but the fine specimens that have been shown have caused surprise by their high quality, and one important thing to consider is that if the females do not breed true to colour, they can be depended upon to breed a good layer, which is most important to utility breeders. They lay a large rich brown egg, of a good size and shape—much better than the Wyandottes, and more like the Rocks, only more of them. The standard weights of Reds are as follows, with a cut for over-weight as well as under-weight: Cocks, 8½ lbs.; cockerels, 7½ lbs.; hens, 6½ lbs.; pullets, 5 lbs.

From the fancier's standpoint, the Rhode Island Red is a breed which has had greatness thrust upon it. The farmers who bred them had only utility purposes in mind, and when it was first suggested that they be taken up as a fancy fowl the idea was scorned. After a time, however, the surpassing beauty of the plumage, the shape and general carriage of both male birds and hens, the fine eyes and high-born manner of the Rhode Island Reds, conquered all opposition, and, by force of merit alone, this breed compelled the recognition of fanciers all over the States.

At first only the single-comb variety was admitted to the standard; but recently the rose-comb type has also been officially recognised. The one criticism which is made against the Reds, from the standpoint of the fancier, is that they do not breed true to colour. There is some ground for this accusation ; but it must be remembered that this proposition is one which has needed to be met in the case of all artificial breeds. As time goes on, it will be as easy, undoubtedly, to breed true to type, as in the case of any other breed. Indeed, the Rhode Island Reds have a decided advantage, inasmuch as red is a primary colour, and thus easier to reproduce than a complementary colour.

Then comes the statement of the critic, that red may be secured, it is true, but that there is a great variety of shades. This criticism will be largely made impossible, as breeders become more familiar with their work and learn better how to mate their pens. As the matter stands now, this very point, of which the critic makes so much, adds zest to the breeding of the Rhode Island Red, and more than ever does the ability and intelligence of the breeder come to the front.

The three important points, which the fancier has to bear in mind, are, of course, shape, size and colour. Next to the surpassingly beautiful plumage of the Reds, their shape is their strongest point, from the fancier's way of looking at things ; and the breeder who keeps this fact in mind is the one who wins the greatest success, other points being equal. A good judge is very keen in regard to this matter, and even extra good colour will not win the coveted awards, if the shape does not come up to the mark ; although it is not surprising that the farmer grows enthusiastic when he looks at a pen of well-bred Rhode Island Reds in full plumage, regardless of their form.

There are few people who are not led to remark at the aristocratic carriage of the male bird, when they see him at the head of his flock. And not only do his style and bearing impress even the novice, but the brilliant colour of his plumage, the low, well-spread, greenish black tail and the bright yellow legs and beak excite unbounded admiration and call forth unrivalled praise. The cock bird, however, does not monopolize either the beauty of the breed or the admiration of the fanciers. The pullet has a dark, rich, even bay colour, which is exceedingly attractive. The undercolour should be rich and glossy without any suggestions of smut, while the main tail feathers should be black. As a rule, the upper ones in the female are edged with red, and the lower edge of the wing primaries should be black, although this desirable point is seldom attained in its perfection. In selecting a bird, look for one which has an oblong body with legs that are set well apart, a well-elevated head and a keen eye. The test of the breeder's skill comes in selecting his stock and in making up his breeding pens.

It is well known that the female regulates the shape and size of the progeny, but that the male bird must be depended upon for colour, as well as for vigour and style. It is a matter of common sense to mate females that are strong in those points in which the male bird is weak. A good rule in regard to colour is to have the females match the male's breast. Of course, extremes of colour should be avoided, and at all times shape and carriage should be kept well in mind.

In developing Rhode Island Reds, outcrossing has been followed for a great many years, and has had much to do with producing birds of the strong constitution, hardihood, strength and ruggedness which the Reds possess. Nevertheless, line breeding is now being depended upon to some extent to emphasize certain desired points and in fixing some of those already well developed. (*See Plate No.* 86.)

RICE (*see* " Feeding Stuffs ").

ROOFING (*see* " Houses ").

ROOSTER. Another name for a cock.

ROOSTS (*see* " Houses ").

ROSECOMB (*see* " Combs ").

ROUEN (*see* " Ducks ").

ROUP (WET AND DRY). Roup is to poultry what distemper is to dogs—a veritable plague. It occurs in various forms, but in the simple form it is usually known as either " wet " or " dry " roup. The former is the name given to that phase of the complaint in which there is a discharge, first of all of almost clear fluid, and afterwards of an unwholesome mucus, getting thicker and more offensive. Dry roup is a condition in which there is comparatively little discharge ; but there is the same irritative condition of the breathing tubes as in the other form of the complaint. As a rule, the wet form can be cured most readily and one of the remedies recommended by experts has been balsam of copaiba (referred to under " Colds and Catarrh "). This is, no doubt, an excellent remedy, but it often acts so suddenly as to throw back the disease into the system. Sometimes it is a better plan to encourage the discharge for a few days, as by doing this it is more likely that the system may be thoroughly cleared of impurities. The copaiba cure, therefore, should only be resorted to as a final corrective. The best course of treatment is to give all the poultry—whether affected or not—some roup powder in their soft food, just by way of a preventative ; let those which are actually attacked have regular doses of roup pills, and bathe their nostrils with warm water containing a little permanganate of potassium, or a few drops of coal-tar solution, or a little borax or boracic acid —all of which are good antiseptics. In some cases the faces become swollen, and matter oozes from the eyes ; this necessitates the bathing of the parts from time to time with an antiseptic. The so-called " swelled head " is the usual form roup takes in turkeys—particularly young turkeys. These birds contract cold, and their faces puff up on both sides, completely closing the eyes and making it impossible for them to see even to pick up their food. They must, therefore, be fed by hand unless they are to lose flesh very rapidly and die. This complaint nearly always comes on just at the time when these young birds are ready to be fattened off for market, and turkey-raisers know full well how serious a matter it is for swelled head to make its appearance in the autumn among their rapidly growing birds. The best remedy for " swelled head " is to bathe the heads with hot decoction of poppy heads, as there seems to be a considerable amount of pain caused by these swellings, and this the opium in the poppy head relieves. The explanation of this swollen condition of the eyes seems to be that the nostrils being stopped up by mucus, the air tries to force its way into other channels, and the tear-ducts becoming congested also,

Head of Hen eight days after Infection of the Roup Bacillus. (a) A cheesy matter.

the cheeks under the eyes become puffed out. Hot fomentations, apart from the soothing influence of the opiate, tend to reduce this state of congestion, and hence is the best remedy so far as external treatment is concerned. With regard to internal remedies, it should be borne in mind that roup is really a blood disease, and as such needs drastic treatment. Vigorous doses of Epsom salt are good—and indeed any medicines which act upon the liver are to be recommended. The various roup powders and roup pills sold by reputable firms may also be tried with confidence. Bearing in mind that it is at the drinking fountain that this disease is most likely to spread, it will be well to put a slight tinge of permanganate of potassium into all the drinking fountains —or some "solution of steel" perhaps still better—as a preventative.

Head of Fowl twenty-two days after Inoculation with a Culture of the Roup Bacillus. (a) A false membrane.

—— **ONE-EYE COLD.** It would be difficult to exaggerate the seriousness of this form of roup although the name by which it is known may appear to indicate a minor ailment. So serious are its effects, however, that it may be regarded as one of the diseases most to be dreaded—all the more so as it comes on in a way that disarms suspicion. The novice in poultry keeping will do well to be on the look out for it, and to stamp it out speedily whenever it appears. The manner of its coming on is noteworthy. The poultry-keeper, whose birds are apparently quite healthy, notices that one or two of them have a slight tendency to frothiness in the corner of one eye. He treat the matter lightly, but a few hours later notices that the frothiness has increased very much and that the eye appears to cause its possessor considerable irritation and inconvenience. The fact is that the matter has now become serious and strict attention will have to be paid to the case, or the bird will stand a chance of losing the sight of the eye altogether. The explanation of the symptoms is this. The bird has an attack of roup, which is causing inflammation of the nostrils and this prevents free breathing, some of the air finds its way into the tear-ducts of the eye (it is usually only on one side of the head that the trouble occurs) and this causes the frothiness or bubbling. At the same time the germs which cause the inflammation find their way to the eye and set up acute inflammation of the delicate nerves of that organ—hence the danger of blindness. The complaint is very contagious and it would seem that one hen in a roost suffering from it will speedily give it to the rest—experience showing that it generally claims a great many victims when once it secures a start. The treatment which is most efficacious is similar to that recommended for "swelled head." Foment the bird's head with a hot decoction of poppy heads, taking care not to allow it to contract a fresh cold afterwards; the object of this hot fomentation is to get the passages cleared and to allay the inflammation. Smear the eye with a little spermaceti ointment; and physic the bird with roup pills, or Epsom salts, or any suitable alterative medicine. This treatment must be repeated twice or three times a day, the bird, of course, being strictly isolated. All other necessary precautions, such as dividing up the poultry into small groups, and disinfecting houses, nest boxes, runs, etc., should be carried out rigorously.

—— **COLD OR CATARRH.** Most of the troubles of the organs of respiration start in the nostrils. A simple "cold in the head," as it is called, may be communicated to the other passages very rapidly. Colds most often are started by birds being compelled to roost in the close atmosphere, laden with carbonic acid gas exhaled from the lungs of the other poultry roosting in the same department. This carbonic acid gas is of an extremely irritating and poisonous nature, consequently it sets up inflammation of nasal membranes. These membranes exude a sort of pus or phlegm, just like what is developed by irritating matter in the intestines (giving rise, in their case, to diarrhœa). So we see that it is not lowness of temperature, but impure air that causes cold in the head. When a bird begins to suffer from cold or catarrh it invariably sends forth into the atmosphere large numbers of bacilli, which settle in the nostrils of other birds and spread the disorder. Undoubtedly a chill will often precipitate the development of a cold, because, when the nostrils have been made irritable by the impure atmosphere inhaled by the bird during the night, in a stuffy roost, that bird naturally will be more susceptible to a chill than it otherwise would have been, and more likely to develop an attack of catarrh. One of the quickest remedies to stop a cold, or catarrh, in poultry, is a capsule of copaiba balsam, given three times daily, but in some cases it is mischievous to stop the nostril discharge—as that in roupy specimens is a sort of natural safety-valve, and it is better to let the running continue, merely sponging away the discharge from time to time.

—— **DIPHTHERITIC ROUP OR CANKER.** This takes the form of masses of cheesy substance growing on the membrane of the mouth and throat, sometimes also getting into the windpipe, in which event suffocation is almost certain to result. These cheesy masses—"canker" as they are called when affecting pigeons—are often found to have eaten their way far down into the flesh, and will come away like the roots of a tree. The "canker" stage is the last stage really of the disease. It is the time then for killing or curing.

When the germ developed has reached its last stage, the fungoid growths make their appearance, and the system is proceeding to unload its poison. The treatment is quite simple, though the abominable smell exhaled renders the application of it far from enjoyable. A piece of wood should be sharpened down to a point, and with this the cheesy masses should be detached from their hold inside the mouth. They will come away, leaving behind, more or less, raw places. These places should at once be touched with solution of nitrate of silver ("caustic") by means of a camel's hair pencil. The bird can then be left until the following day, when it will probably be found that some more growths have appeared. These should be dealt with similarly; and, again, on the third day, another dressing will probably complete the cure, and the bird will be permanently free from the disease. There need be no deaths except such as are occasioned by suffocation, when the windpipe is affected —a comparatively rare occurrence.

The usual course adopted when this dreaded disease breaks out is to kill the affected off and cremate them, but after all this might mean that the majority of birds in the poultry-yard would have to be destroyed if perfect immunity is to be ensured; and then, when all this destruction has been wrought, there would be no certainty whatever that new stock purchased would not at once contract the complaint, and so the last state would be worse than the first. It may prove more effective to set about curing the birds affected. These will then be inoculated against any recurrence; and it is quite as easy and effective to disinfect the place there and then as it would be if it were intended to introduce new stock altogether.

All pens and runs in which the sick birds have been confined should, of course, be destroyed, as should also all materials likely to retain the infection; in fact, every possible precaution should be taken that will tend to prevent any remnants of the disease being left on the premises.

RUMP. The hinder part of the back.

RUMPLESS FOWL. One of the rare curiosities that are found among fowls, as in all classes of live stock, is the Rumpless. The name suggests a bird without a tail, and indeed, this is the characteristic of the breed. Nothing more ridiculous, quaint or grotesque—whichever way you like to look at it—could be conceived in fowl life. Any humour that might ever have been implanted in the behaviour of the domestic fowl is surely concentrated in its Rumpless representatives. The cock, gallant and important in his tailless way; the hen, coy and businesslike in her tailless way. The cock fine and gay, after the manner of his sex in front—behind, a failure; the hen neat and round, after the manner of her sex in front—behind, a nonentity. Each a model of humorous deportment.

Very few of these fowls are bred in England and scarcely ever, nowadays, is one exhibited—hence little is known about them. The writer is acquainted with one or two amateurs who are experimenting in the production of a rumpless race—with little success in the matter of establishing colour or markings, or standardizing size. The actual production of fowls minus the caudal appendage is an easy enough matter, inasmuch as when once a rumpless stock bird has been secured, it will transmit its characteristic to a large percentage of the chickens; and for generations rumpless specimens will continue to appear, even though the normal individuals only have been bred from. Some time ago a tailless Black Orpington pullet was encountered in the yards of one of the best-known breeders in the country. This specimen, however, was probably the result of the craze for "shortness" of body among Orpington enthusiasts.

In some parts of the world there can be no doubt Rumpless fowls are quite common. In 1908 some discussion with regard to the breed appeared in the columns of "Feathered World," and it then transpired that tailless fowls, like tailless cats, are by no means uncommon in the Isle of Man. It is a curious thing, this—one for which there must be some interesting explanation. The West Indies, too, are said to have a tailless race, and again, there is a Belgian breed from which the caudal appendage is noticeably absent. All these are ordinary farmyard utility fowls, but in England we regard such few Rumpless as we come across as freaks of and for the fancier's art—freaks pure and simple. The birds are naturally of all colours and all kinds of markings—never having been scientifically bred, or at any time standardized—and in size they vary from the bulk of a Wyandotte to the diminutive proportions of a Bantam. As a matter of fact the Rumpless Bantam is probably as common as the Rumpless fowl, but it is unlikely that either will ever become popular.

In respect of any practical qualities that may belong to the breed, it is difficult to speak authoritatively. You cannot say that the Rumpless hen is a sitter, because she differs individually. Nor, from the same cause, can you say that she is a good layer. As in the case of the ordinary mongrel she is both good and bad—and, in fact, is herself little better than a mongrel. The table qualities should be fairly good—but it is impossible to look at such a creature from a practical standpoint. In breeding Rumpless, the eggs are not infrequently found to be sterile. On that account some of the best specimens are occasionally rendered useless and have to be killed.

RUNS (*see* "Accommodation" and "Houses").

SADDLE. The part of the back of a fowl between the middle of the back and the tail, called the "cushion" in a hen where that part is raised and prominent. (*see* "Cushion").

SADDLE-HACKLES. The long, pointed feathers falling over the saddle.

SALESMEN (*see* "Markets and Marketing").

SCALY-LEG. Scaly-leg, as the name implies, is a peculiar condition of the leg scales, which become encrusted with a powdery substance, rendering them very unsightly and causing great inconvenience to the bird. It occurs in two forms—the parasitic form and the scrofulous form. The latter occasionally appears on scrofulous subjects as an accompaniment of bumble-foot and skin complaints generally, but the parasitic form, which occurs in the vast majority of cases, shows how insects can do mischief if they are not checked at their first onset. Scaly-leg is generally started in what may be termed a mechanical way. A glance at the scales on the fowl's leg will show that they fit together very closely. When the bird is young they are always compact and neat, but as the bird grows older they tend to expand and grow hard at the same time. The bird then in scratching about for food, particularly amongst ashes and other gritty substances, increases this tendency to roughness and so opens up the scales to admit of the entrance of a tiny parasite (*Sarcoptes Mutans*), which begins at once to throw out a floury eruption. The disease is quickly spread through the medium of the perches, which should, therefore, be cleansed from time to time.

When suitable parasiticides are employed, the parasites which are the cause of scaly leg are easily destroyed, and for this purpose sulphur is mostly used, with some fatty substance to form an ointment, and, in some cases, petroleum jelly, sold as vaseline, etc. Neither fats nor the petroleum jelly will readily penetrate to where the parasites are most numerous, that is, underneath the scales near to the

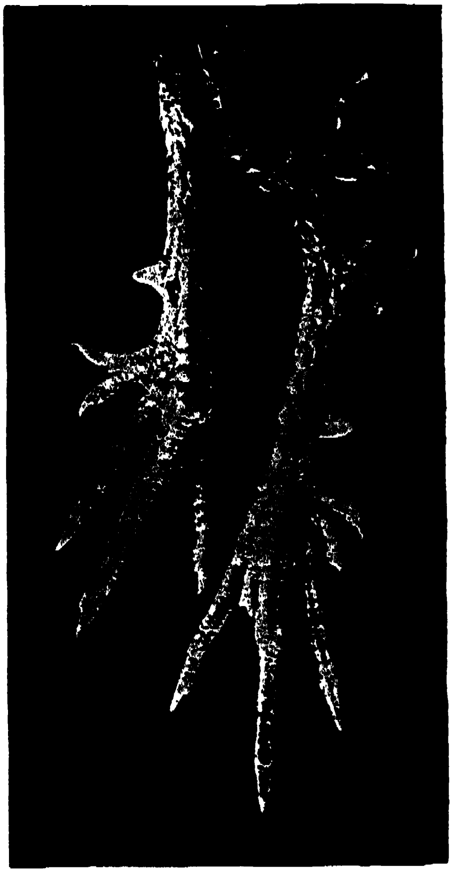
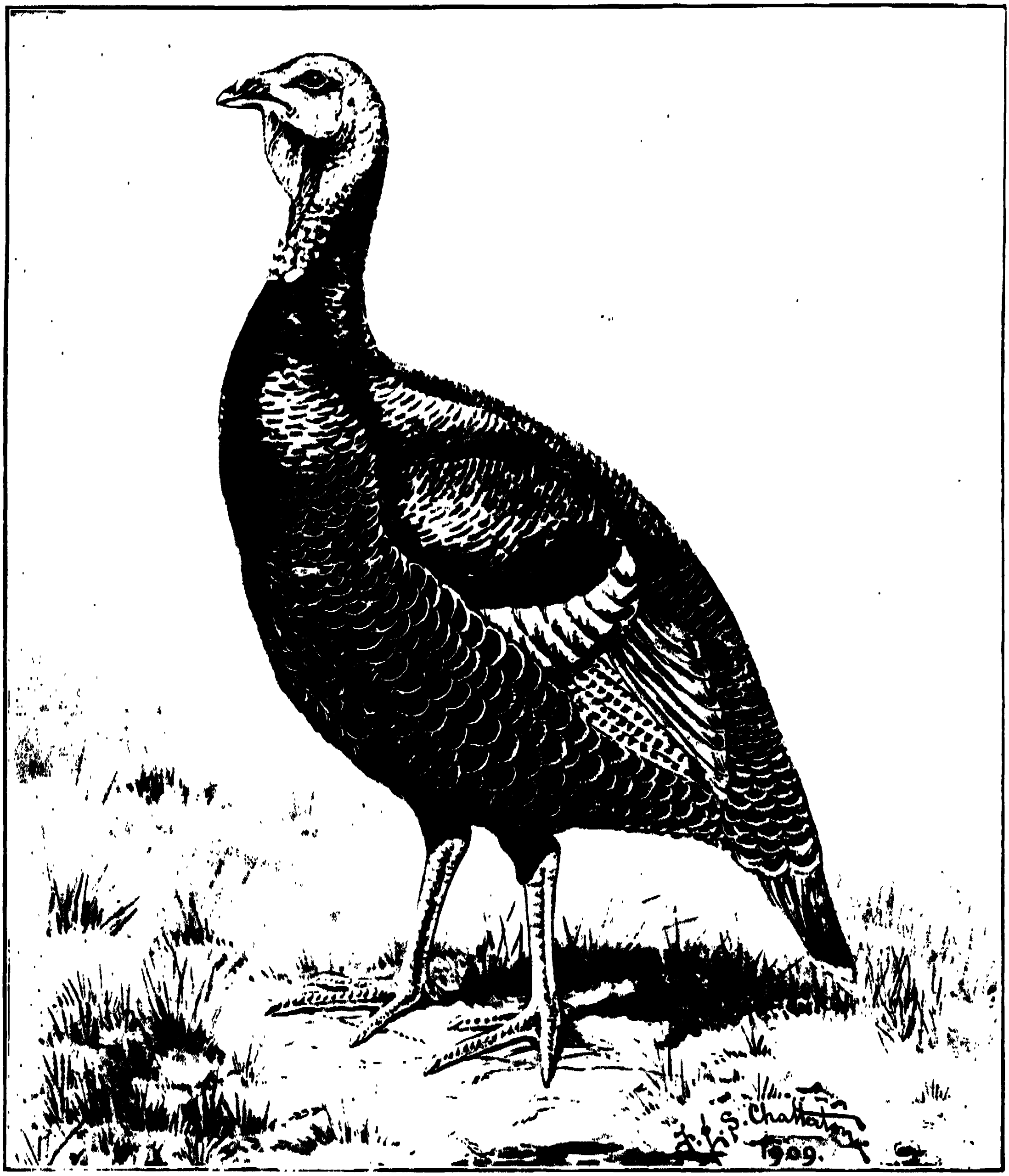


Illustration of a Clean Pair of Legs.

PLATE No. 90

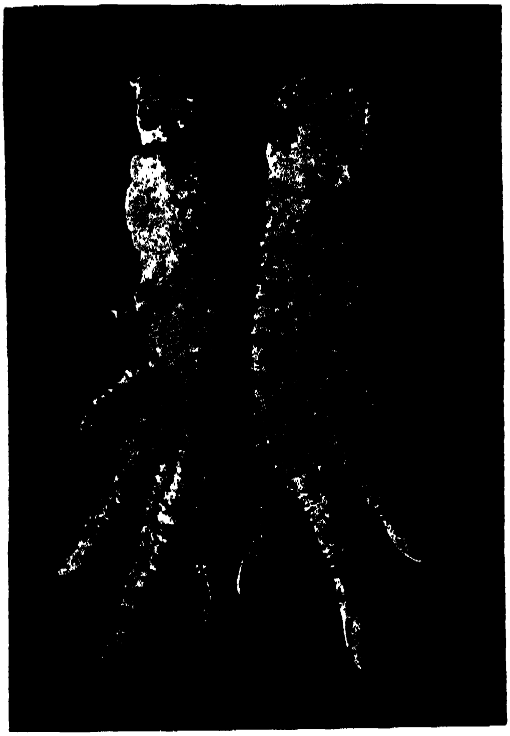


American Mammoth Bronze Turkey Hen.

(*The property of Mr. Thomas Abbott, Norfolk Live Stock and Poultry Farm, Wymondham, Norfolk.*)

Winner of 1st Aberdeen Agricultural Show, 1st Ayr, 2nd Royal Counties at Reading, and 2nd Leeds.

leg; but fats are much better than vaseline, and oil would be better than either. However, a lotion containing some parasiticide is by far the quickest destroyer of the parasites, and much the most pleasant to employ, and it will not soil the plumage like a greasy substance, or cause a large quantity of dirt to stick on the legs of a fowl. When using any kind of lotion to destroy the parasites underneath the scales on the legs of a fowl, it is advisable to hold it on its back, with its feet uppermost, so that the parasiticide may flow underneath the scales. Before applying the lotion, or other remedy, the legs and feet of the fowl should be thoroughly cleansed, and if they are very rough, they should be rubbed down with very fine sandpaper, or emery cloth, and then cleansed with a rather stiff brush dipped in vinegar. The vinegar will soften the scales and dissolve a considerable quantity of the powdery epidermic matter underneath them. The following parasiticides will be found very effective: (1) One part of Lugol's solution of iodine and six of strong acetic acid; but it would prove irritating if the legs were much inflamed. This lotion should be applied with a camel's-hair pencil while the fowl is held on its back with its feet uppermost, and only a little at one dressing applied, and not more frequently than on three alternate days; but one application may destroy all the parasites on the legs dressed with this lotion. Instead of a camel's-hair pencil, a fluffy feather that has been soaked in a solution of common washing-soda may be used to apply the lotion. (2) An excellent oily parasiticide is one part of beech creosote, one of camphor, seven of oil of turpentine, and three of sweet oil. The camphor should be dissolved in the oil of turpentine, and then the creosote should be mixed with the sweet oil by shaking, and then the whole should be thoroughly mixed by agitation. This application should be applied in the same way as the previous one, and, like it, it is rather irritating when the legs are inflamed. (3) After the legs have been thoroughly cleansed with rather hot water and a stiffish brush, they should be allowed to dry, and then be well soaked with a solution of sulphate of soda of the strength of six ounces of the salt to a pint of water, the feet being held uppermost of the body of the fowl; and on alternate days the legs should be soaked with a lotion composed of one part of hydrochloric acid—spirits of salt—added to about twenty of water—one ounce to one pint of water. The hyposulphite of soda which the legs were previously soaked with would combine with the hydrochloric acid, forming sulphur, sulphurous acid and chloride of sodium, all of which are destructive to parasites, and cases of scaly leg would certainly be cured by this treatment in a week. (4) Sulphide of calcium in solution



A Bad Case of Scaly Leg.

is another very serviceable parasiticide, and it is the most suitable application when the legs are badly inflamed. It may be easily made, and it is the least expensive application. It may be made by boiling together in a gallon of water one pound of lime and one pound of sulphur in powder for about an hour, keeping it stirred all the time, and then setting it aside to cool and settle, and then bottling the clear liquor in dark bottles and keeping it in a dark place until it is required for use. The deposit may be dried, and used to dust into the plumage of any birds, to clear them of lice. The legs of fowls suffering from scaly leg should be thoroughly saturated with this lotion every day for a week. (5) A very useful parasiticide may be prepared by dissolving three pounds of soft soap in a quart of water, and then, by agitation, mixing with it a quart of paraffin oil and as much water as will make a creamy solution. An old saucepan may be used to melt the soap in a little water, and it should be removed from the fire before adding the paraffin oil. This solution should be used like the preceding one.

SCOTCH GREY. Scotland has not given us much in the way of poultry, but she has given us one breed that ranks rightly among the best of present-day fowls. That breed is the Scotch Grey, which, although little known and seldom seen south of the Tweed, is none the less extremely valuable. That it is also very old is quite certain, and best proved by the fact that the Scotch peasantry, in whatsoever part of the country, unfailingly know it—know it not always by the name given above, but, as a rule, by some local name: the most common of its Scotch names is the "Chick Marley." In Scotland it is often encountered on farms and around cottage doors, and it may very well be termed the Scottish national fowl. Indeed, the matter-of-fact appearance of the bird somehow suggests the hard, practical country from which it comes.

The origin of the breed is most difficult to determine, despite investigation by a number of competent persons. It is the opinion of the writer that the Scotch Grey is simply the outcome of long generations of barn-door fowls—is, in fact, a barn-door race. In England—as upon the Continent—it has been found that mongrels in a certain district, if allowed to breed and inter-breed (but not to out-breed) gradually evolve a characteristic race and that that race is more frequently cuckoo-coloured (the result of black crossed on white) than characterized by any other form of colour or marking. That the Scotch Grey contains a Dorking element does not seem reasonably probable. The type is not that of a Dorking, the shape not particularly so, and the fifth toe—a dominant Dorking feature—never occurs. A far more likely suggestion is that the Old English Game fowl has played a part in the ancestry of the Scotch Grey—indeed, this may almost be accepted as fact. The type of the bird and the length of leg decidedly go to bear out the supposition.

In Scotland, at one time, the breed enjoyed great popularity as a show bird, and also as a valuable utility fowl. Fine classes were seen at the old Edinburgh shows, although then the specimens exhibited were far smaller, the markings much coarser, and the general appearance less interesting than those seen to day. About 1880, however, the breed lost ground, and was at one time even in danger of extinction. Efforts were made to keep it going, a club was formed, and to-day, in Scotland, the Scotch Grey, as a pure breed, is in a fairly flourishing condition.

The two chief characteristics, the colour and type, are thoroughly distinctive, and when seen at a show, it is impossible to confuse this with any other breed. The plumage is what is known as "cuckoo-coloured," that is to say, black marking upon a light grey ground colour. The colour and marking are often represented as similar to those of the Barred Plymouth

Rock, but really there is considerable difference. In the Rock we have a narrowly, richly-barred bird, the barrings being straight and even and giving the appearance of ringing round and round the body. That is *barred* plumage. The Scots Grey is marked more or less crescentically, the black is not nearly so rich or deep as in the Plymouth Rock, and the ground colour is much lighter. This is *cuckoo* plumage. The great fault which for very long beset the Scotch Grey, but which has now apparently in part been overcome, was a very brown tinge (technically known as "rustiness") in the markings; these should be a deep, sound black. This is not quite the same thing as "brassiness" (usually a yellow patch on the wingbow or saddle) in the Plymouth Rock, but it is more or less difficult to eradicate. Other faults common to all fowls of this or similar plumage, crop up. Among them white in tail, unsound and dark flights, black running into white, etc. These can only be guarded against by careful mating upon lines described in the case of the Plymouth Rock. The difficulties are the same, so also are the ways of overcoming them.

The shape of the Scotch Grey is more nearly that of the Old English Game than anything else it could be likened to. The carriage is upright and what may be described as "tall"—indeed, the bird is tall, standing as it does on long shanks and thighs. The breast is rounded and the back slopes down from hackles to tail without sign of cushion. The tail is rather long, not in the cock, heavily feathered, but carried at a natural angle from the body. These features, together with a single comb, are all part of the character of the breed and undoubtedly render it attractive. At the same time this Scotch Grey is no fancy creature, no fit subject, in the opinion of the writer, for the fancier's arts. It is a farmer's breed, a cottager's breed, an essentially Scotch—and, therefore, an essentially practical—breed. And as such, let us hope, it will always be considered.

The Scotch Grey's utility qualities are such as to recommend it most strongly to poultry-keepers in general. It is, in fact, a first-rate general purpose fowl, combining all the qualities that are requisite in farm poultry. The average number of eggs produced in a year by one hen is not, perhaps, great in these days of trap-nests and enormous individual production. The Scotch Grey is one of the few remaining breeds that have not been exploited in this direction; the great *utility* of the fowl is its recommendation. The eggs are white or cream-coloured, and of uniformly good size—in fact, some experiments conducted in France a few years ago showed the Scotch Grey to lay larger eggs than any other breed. As sitters the hens are not at all reliable, indeed, some never become broody, while others begin to sit only to desert their nests, and a few cover eggs as well as any Orpington or Wyandotte. On the whole, however, this may be called a non-sitting breed. The table qualities are so well developed that the Scotch Grey might almost be placed in the first rank, but for the fact that the breast has not the breadth or the body the length nowadays expected. None the less the flesh is of quite the finest quality, being white in colour and possessing much of the flavour of the Old English Game fowl. The birds well repay fattening, but even if picked straight from a farmyard a cockerel would provide a more than satisfactory meal.

That there can be any sturdier, hardier breed than the Scotch Grey, it is impossible to believe. From beginning to end this is a farmyard race, and as such it can be relied upon to thrive in the coldest climate, on the windiest hill, under the most exacting conditions. The chickens grow at a fair pace, but they can be relied upon to grow—to reach maturity. Taking that into consideration with the many other good points already enumerated, it is sincerely to be hoped that a future of growing prosperity and popularity is in store for this fine, native race.

SCRATCHING SHEDS (*see* "Houses").

SEBRIGHT BANTAMS (*see* "Bantams").

SECONDARIES. The quill-feathers concealing the primaries.

SELF-COLOUR. Plumage in which each feather is of a uniform tint.

SELLING CLASSES (*see* "Shows and Showing").

SEPARATION OF SEXES. A very important factor in economic production and one very frequently ignored, is the separation of the sexes at certain periods—according to the objects of the production. To commence with the growing chickens, it should be obvious upon reflection (and as the result of observation) that adequate growth and development, of pullets or cockerels, cannot be as perfect as would otherwise be the case, unless the birds are separated before the sexual instincts assert their influence. As the age at which separation becomes necessary is variable, being more in the case of the heavy than the light breeds, it is advisable to fix the minimum at about six weeks—which will be safe in any case. When separation takes place it should be as complete as possible, and the sexes should not only be out of sight but out of sound of one another; and under no other circumstances will the progress be so satisfactory, or the maturity so perfect.

In the case of adult breeding stock the great mistake of the ordinary farmer consists in his perpetual mating of his fowls; throughout the year cocks and hens are run together indiscriminately, and fertile eggs are expected at any and every season. Here again a little consideration would suffice to show the unreasonableness of the expectation, and the necessity for a restful separation at any but the breeding season proper.

In the case of sitting hens some period of rest from production is naturally provided by the work of incubation, but the permanently mated male is very liable to lose condition and vitality—with the result that eggs are infertile, or their germs are not sufficiently strong for the production of a sturdy progeny.

In the fattening coop there is a further need for separation, in that fattening not only depends upon the quality and quantity of the food consumed, but also necessitates a condition of quietness, undisturbed by sexual or other excitement. In such circumstances not only should the pullets and cockerels occupy separate coops, but their coops should be as far as possible removed from sight and sound of one another—or if this is impossible, should be hidden by a faggot or other temporary screen.

All these may appear to the uninitiated to be trivial details of management, but nowadays competition is so keen that profit largely depends upon the attention given to an accumulation of small items—each in itself apparently insignificant. A final note in connection with this subject of separation may be made in reference to the separated cockerels, being reared for breeding purposes. These, as any breeder will know, are prone to disagree among themselves—even when far removed from the pullets, the common cause of fights—but serious and damaging combats may be avoided by penning them in company with an old cock bird, who will, in the majority of cases, assert himself from the commencement and preserve order among the young bloods.

SETTING HENS (*see* "Incubation, natural").

SEX, BREEDING FOR (*see* "Mating").

SHAFT. The quill of a feather.

SHANK (*see* "Leg").

SHARPS (*see* "Feeding Stuffs").

SHELDRAKE (*see* "Waterfowl, ornamental").

SHELL-LESS EGGS (*see* "Eggs, abnormal").

SHELTERS (*see* "Houses").

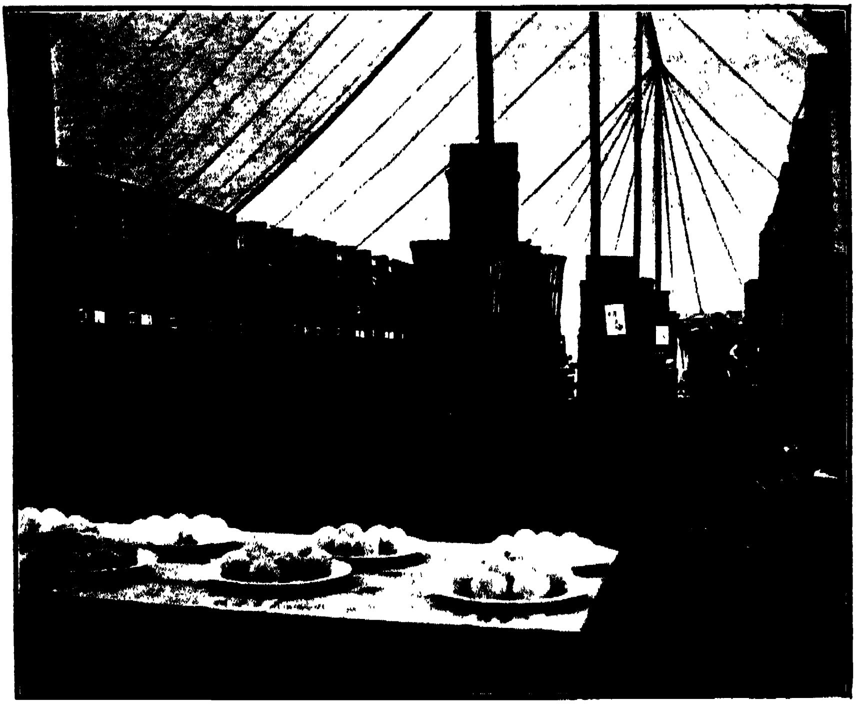
SHOVELLER DUCKS (*see* "Waterfowl, ornamental").

SHOWS AND SHOWING. There are approximately, something like 700 shows held every year in the United Kingdom, from the Grand International at the Crystal Palace, with its 420 classes, down to the village show with its three or four classes for pure bred poultry. These shows are the objective of the thousands of fanciers who breed exhibition stock, although it may be stated here, that exhibiting in itself is not generally a profitable business. The successful breeder makes it pay him well because by exhibiting and winning his stock becomes better known. The shows are, therefore, to many people merely an advertising medium, although to many others they provide part of the excitement which makes the fancy such a fascinating hobby.

The fancier's year is divided into two show seasons, the summer season, commencing in June and ending in September, whilst the winter season commences in October and ends in January. Between January and June very few shows are held. The summer season embraces the whole of the agricultural shows, and the most important are the Royal of England, the Royal Lancashire, the Royal Counties, the Bath and West of England, the Yorkshire, the Wirral and Birkenhead, Hayward Heath, Altrincham, etc. Shows of this class are invariably held under canvas or light temporary buildings, while the winter shows are held in permanent buildings. The Grand International, at the Crystal Palace, is the largest and most important, while the Dairy Show, at the Argicultural Hall, caters entirely for birds hatched in the current year. These two and Birmingham Show rank as classic fixtures, whilst other first-class exhibitions are held at Manchester, York, Leeds, Bristol and other important centres. Many of these shows are held in connection with agricultural exhibitions, and of those which rely upon the fancy pure and simple, very few are self-supporting. The general public have not become sufficiently interested in poultry to patronise them in a generous manner, and so many shows that have not been able to command a long list of subscriptions have been compelled to close their doors or restrict their operations.

The prize money and entry fees at these shows vary. At the Crystal Palace, in the majority of classes the prizes are 30/-, 15/-, 7/6 and 5/- for an entry fee of 5/-, while at the Dairy the prizes are generally 40/-, 20/-, 10/- and 5/- for an entry fee of 6/-; and at Birmingham a similar rate is adopted in most classes, though in some cases extra sums of money are subscribed to increase the number and amount of the prizes. At the larger provincial shows the usual rate is 20/-, 10/- and 5/- for an entry fee of 3/- or 3/6, and at the many smaller shows the usual rate is 12/-, 6/- and 3/- for an entry fee of 2/-, or 10/-, 5/- and 2/6 for an entry fee of 1/6 or 2/-. In addition to the regular prizes, cups, medals and specials in cash or kind are given at most shows, and these are often worth more than the usual class prizes.

Announcements of nearly all shows are made in the fancy journals some weeks before the event, and schedules are printed, setting forth the classification, the prizes and entry fee, special prizes, judges and rules of competition. These schedules are circulated among regular exhibitors, members of clubs, and all who apply for them, and entries are required to be made before a given date. The fancier who desires to exhibit consults these schedules, selects a show at which suitable classification is provided, and makes his entries on the form enclosed in the schedule. All he needs to do is to put down the number of the class for which he enters, a description of his exhibit, age (if necessary), amount of entry fee, and price of exhibit if he desires to sell, or any prohibitive price or the letters N.F.S. (not for sale) if he does not wish to sell. Then he must write his name and address in the space provided, and send the form, with the necessary amount of entry fees, to the secretary of the show.



General View of a Poultry Show held under Canvas.

Some few days before the show the exhibitor will receive a label for each of his entries, bearing the number of the pen in which his exhibit is to be accommodated, the show secretary having in the meantime entered up all the exhibits received in a book, keeping them in their separate classes, and finally numbering them up so that labels may be sent and the classes correctly penned and catalogued.

Before we deal with the actual sending of birds to a show, however, we must consider the very important matter of their preparation, because judges make much of condition, and a well-groomed, well-trained exhibit has a great advantage over a bird that is neither trained nor groomed. The amount of preparation necessary depends entirely upon the variety and the colour. We have known successful exhibitors, especially of Game fowls, to pick their birds up out of the run, sponge their faces, wipe their legs and pack them off to a show without further trouble. And on the other hand many exhibitors begin their preparations three or four days before the show, and go to great pains over them. White or light-coloured fowls naturally give more trouble than darker-coloured ones, as in most cases it is absolutely necessary to wash the birds before sending them to a show. Let us, therefore, assume that we have to prepare a white fowl for exhibition, and proceed to turn it out in spotless condition. We must, however, first of all explain that although the actual toilet of an exhibition bird commences two or three days before the show, it must have been kept in sheltered quarters for some time before, in fact, ever since its present crop of feathers began to grow, for exposure to sun and rain would mar its beauty. Therefore, when a fancier has a young bird that seems likely to grow into a good show specimen, or an old bird that is moulting out well, he must keep it in suitable quarters, so that it will not be spoilt by exposure to the weather. For this purpose most fanciers keep a number of small, well-ventilated houses, with small runs attached, so that the inmates can be turned out for exercise when the sun has gone down and the weather is suitable. In the same way, white fowls must be kept clean, for though a little dust or ordinary dirt will wash out, droppings of other fowls will stain the plumage, and many good birds are spoilt in this way when a number are kept together.

The washing of a fowl is not a difficult process, and it is so interesting that anyone may become expert with a little practice. First of all we require a small bath or vessel about 2 feet long by 15 inches wide, with about eight inches of water as warm as one can comfortably bear it. Immerse the bird in this, taking care to keep the head out, and let the feathers get thoroughly wetted. Then we must employ soap, and for this purpose many people put a packet of soap powder, such as Lux, into the water and make a good lather, while another plan, which we prefer, is to make the lather as we require it with the aid of a piece of good white soap. In any case, start at the head, and carefully soap the feathers round about the face, afterwards swabbing with a piece of sponge and wiping with a clean cloth to prevent any soap getting into the eyes. Then go on to the hackles and lather them well between the hands, working the soap well in to the skin. Then deal with the wings, the back, the breast, the fluff and shanks and the tail in the same way, taking care to avoid damaging the sickle feathers of the cock, until the plumage has been well lathered and the soap worked thoroughly in among the feathers.

When that has been properly done it becomes necessary to get all the soap out again, for it must be remembered that the plumage will not dry and web out properly while any soap is left in. It is, therefore, essential to have another pan of clean water ready, cooler than the first, in which the feathers should be well rinsed so that all the soap is got rid of. This is done by working the hand among the feathers, so that the water gets well among them. Finally, there must be another change of water ready, almost cold this time, and this should be coloured by means of a blue bag. The exact amount of blue required to heighten the purity of the white without leaving a blue tinge must be gauged by experience, but beginners should not put in more than will nicely colour the water. Dip the bird once or twice into this, so that all the feathers are immersed, and then take it out and let it drain, squeezing the surplus water out of the feathers with the hands. Then with a spotlessly clean, warm towel get a little more of the moisture out, without, however, rubbing the feathers, which may damage the web. After this the bird should be placed before a good fire, either in an unlined hamper or a show pen, and it should be carefully looked after turned frequently so that it may dry on all sides. A good plan is to construct a small cage with wire netting, just large enough to hold the bird, and fitted with a raised block of wood upon which the bird can stand. This cage can be turned round from time to time, and can be placed at any distance from the fire, as the state of the bird requires. In this way a well-washed bird can be dried out in four or five hours, and the plumage will web out naturally. If a few of the tail feathers are inclined to curl, that may be due to the fact that they have dried out too quickly. These, however, will soon assume their natural condition, and when a bird is washed three or four days before the show it has ample time to recover from the wash. Occasionally a bird may faint whilst being washed, and in such a case a little cold water should be thrown over the head, whilst a spoonful of brandy and water will help to revive it.

In washing fowls of other colours it is not necessary to use blue in the water, but otherwise the operation should be the same. Even black and coloured fowls are sometimes washed, as the condition may be improved thereby ; but in ordinary cases it is sufficient to sponge the plumage over in order to brighten it. After being washed the birds should be kept in exhibition pens until they are sent off to the show.

Thus far, however, the preparation affects only the plumage. Next we may consider the shanks and feet, which must be made perfectly clean. With a bowl of hot water, some soap and a nail brush all dirt can be removed on the surface, while in order to thoroughly cleanse the scales it is advisable to use a piece of hardwood sharpened to a flat point, so that it may be passed beneath the scales to remove any dirt that may lurk there. After being washed the leg should be dried, and finally rubbed with sweet oil, which will give a polish. As regards the comb and lobes, the condition depends upon the manner in which a bird has been kept. When it has been exposed the comb is generally rough and the lobes blistered or discoloured, which necessitates two or three weeks' work to improve the condition ; but if the bird has been kept under cover this can usually be avoided. In any case, application of sweet oil will soften the comb and improve the colour, and in making the final preparation before a show the comb and the red part of the face should be sponged with cold water, dried, and then anointed with sweet oil to bring up the colour. White lobes can be improved considerably, but the preparation should commence two or three weeks before the show. First of all sponge the lobes with cold water, then thoroughly dry them, and apply a little zinc ointment, finally dusting on a little violet powder. If this is done every day the colour and condition of the lobes will be greatly improved, and before the bird is sent to the show it will only be necessary to wipe them over with the ointment and put on a little violet powder.

All this is legitimate preparation, and it should be remembered that there is a well-marked line between this and faking. Illegitimate preparation includes the application of colouring matter of any kind to any part of the body, the removal of faulty or superfluous feathers, the cutting or trimming of any portion of the comb, lobes or plumage, and, in fact, the performance of any operation that changes the natural condition of the bird. Many clumsy fakes are perpetrated by inexperienced people, such as colouring the legs or cutting or removing faulty feathers, while occasionally clever operations are performed by dishonest fanciers of experience. These, however, when detected, are severely punished by the Poultry Club, or similar bodies, and the practice of faking must be strongly condemned as dishonourable and unprofitable.

An exhibition fowl must undergo some training before it is sent to a show, or it will fly about in its pen, or crouch in a corner, when the judge comes to examine it, with the result that its chances will be prejudiced. A well-trained bird stands quietly in its pen, shows itself off, and allows the judge to turn it round or handle it, and to accustom young fowls to this kind of thing they should be kept confined

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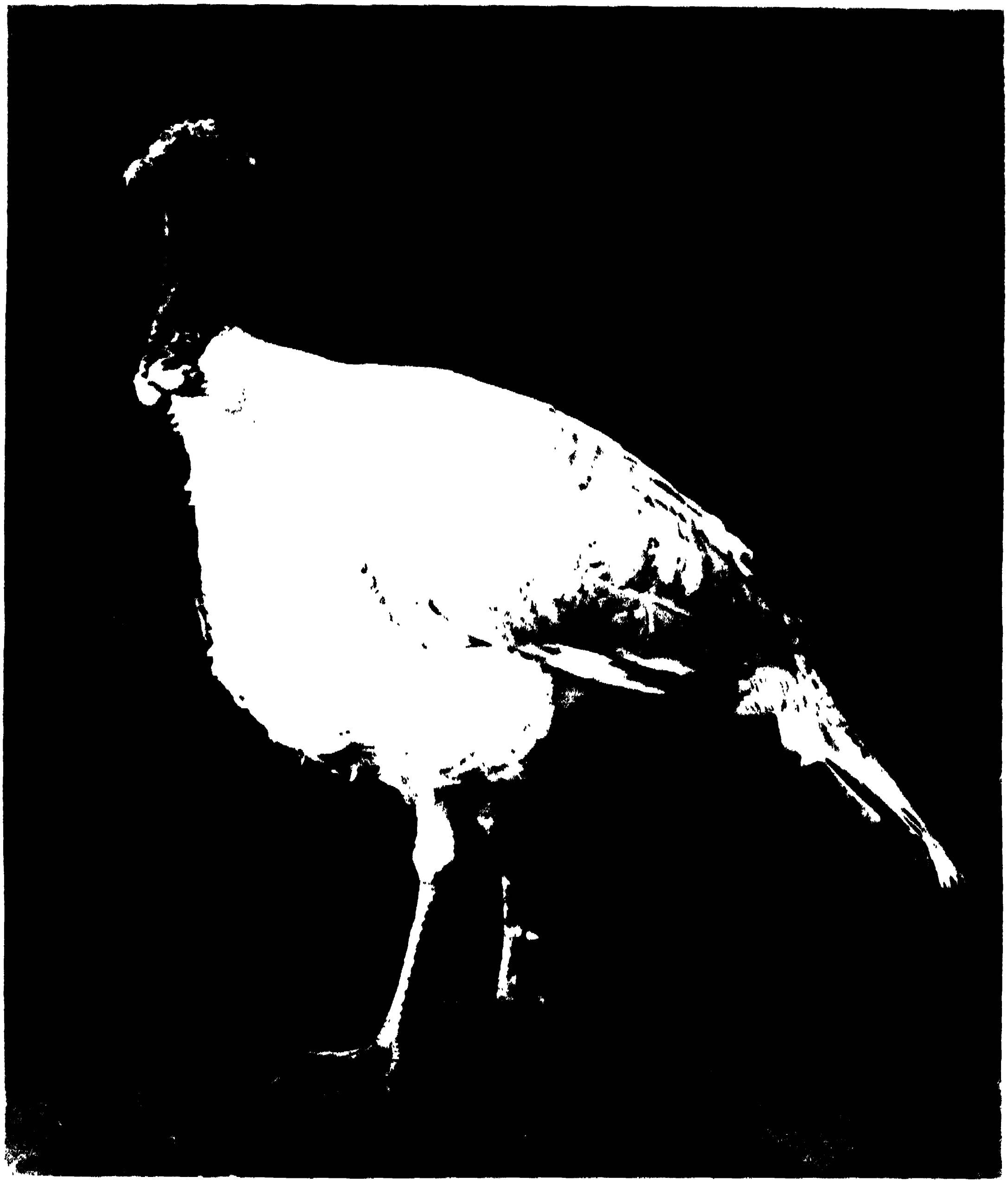


White Austrian Turkey Cock.

(*The property of Lady Harlech, Brogyntyn, Oswestry.*)

Winner of 1st Oswestry and 3rd Birmingham, 1908.

in exhibition pens for ten days or a fortnight. They will very soon gain confidence and come to feed out of the hand, whilst a stick may be passed through the bars of the cage and over their feathers. Then frequent handling will also accustom them to the proximity of human beings, and it is surprising how soon a bird becomes tame enough to advance to the front of the pen whenever anyone approaches.

A bird should be despatched to a show in good time so that it may arrive on the evening before the show opens. The label should be securely attached to the hamper, with the address written upon the back for the return journey. The hampers for this purpose are of a special type, those for single birds being round, with the lid at the top. They are made in various sizes and various qualities, and those for cocks should be at least four inches deeper than those for hens. All baskets should be lined with canvas, and a handful of hay or straw should be provided at the bottom for the bird's comfort and cleanliness. When two or more birds are sent to a show it is a good plan to use hampers with several compartments, some having two and others three or four, with canvas partitions between. These are built of stronger wicker work, and are square cornered with one large lid over all, fastening with straps, and smaller lids to each compartment. When fanciers exhibit a number of birds the railway charges are proportionately less per head when three or four birds are sent in a compartment hamper than they would be if sent singly in small round baskets.

There are several important points which amateurs should bear in mind in connection with exhibiting, and the first is that it is useless wasting money on entry fees and carriage unless the birds have a reasonable chance of winning. For instance, it would be folly for an amateur to enter his birds at the larger shows until he has proved their quality at the smaller ones. The shows enable fanciers to form an accurate opinion of the merits of their birds by comparing them with those of other people, so that it is of great advantage to an amateur to visit the shows where his birds are exhibited, and see for himself how they compare with others. For this reason the beginner will be well advised to send his birds to shows within a reasonable distance of his home, and if he meets with success he may go further afield in the future. The more experienced fancier selects the shows where he is likely to have the best chance of winning, and frequently he follows certain judges, because when a bird has once won under a judge it is good policy to send it under him again.

The exhibiting of poultry necessitates close confinement for some considerable time, and consequently it affects the vigour and constitution of a bird, so much so that a fowl which has been exhibited frequently may be unfit for breeding until it has had two or three months on an open range to recover. For this reason it is bad policy for a beginner to subject the stock he intends for breeding to too much showing. At any rate, if he desires to show some of his birds more than once, he should, in the interval between the shows, allow them to run out in sheltered runs where they will keep clean, and endeavour to maintain their health and vigour by providing plenty of green food and seeing that they get sufficient exercise. When a pen is once mated up for breeding, individual birds should not be removed for showing, and if stock in the breeding pen are required for exhibition during the coming summer every effort should be made to protect their plumage by keeping them in sheltered runs.

Shows provide opportunities for the sale of birds, and at the large events, where numerous selling classes are provided, several hundred pounds worth of birds change hands. At these shows the selling price limit is generally £2, but as the exhibitor has a chance of winning prizes of from 30/- to 5/- in addition, it is generally necessary to send birds a bit above that value in order to win. At the smaller shows the price limit is usually 20/- or 10/-, so that besides providing opportunities for the buying and selling of birds, these classes give the owner of inferior stock a chance to exhibit with some hope of success.

Exhibits are generally packed up at the close of a show and frequently travel during the night, arriving home the following day. On arrival, they should be given food and water, and an ordinary tonic pill, such as can be obtained from any medicine vendor, will help them to recover from the effects of close confinement, while, if the weather is favourable they should be turned out into a small, sheltered grass run for exercise and fresh air. The small houses, with runs attached generally used for show birds, will provide suitable accommodation until they are required again for show, and in the meantime they should be fed generously, a plentiful supply of green food and grit being provided, as well as a little cooked meat each day, and a course of tonic pills if they are not looking in good condition or are showing signs of suffering from the close confinement (*see* "Legal—Law as to Show Committees.")

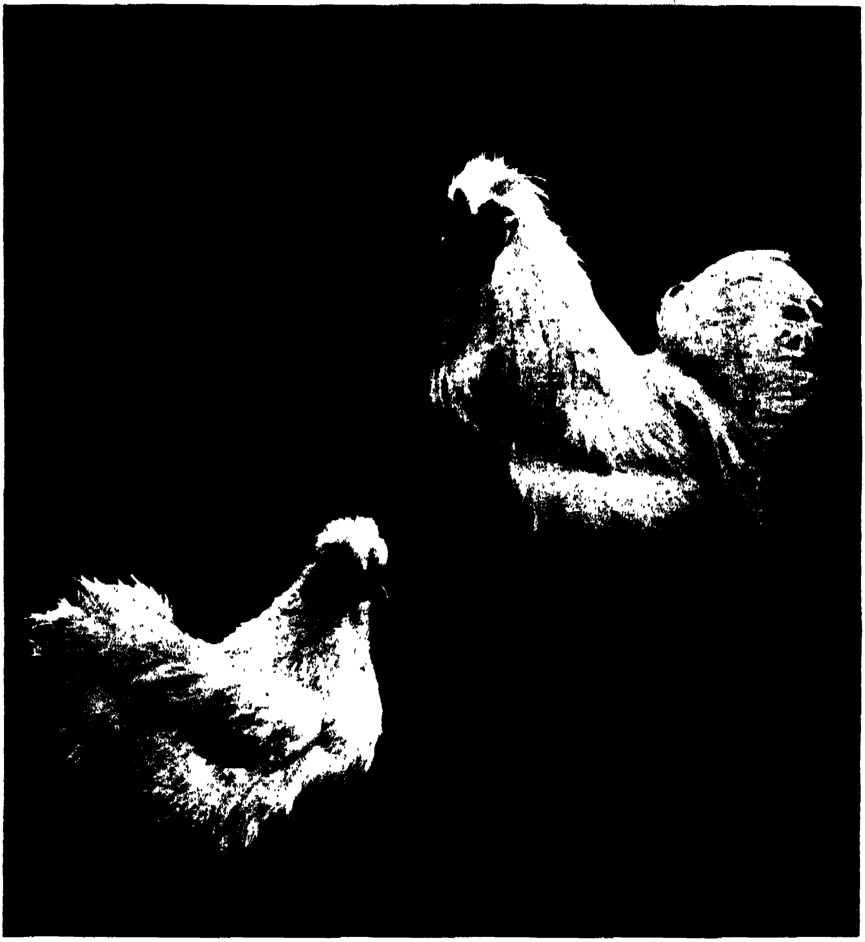
SICKLE-FEATHERS. The longest curved feathers in a cock's tail.

SILICATE OF SODA (*see* "Eggs, preserving").

SILKIE. Of the many quaint varieties of poultry the Silkie takes a leading place, both on account of its antiquity and the peculiarities which separate it from other breeds. The leading difference is that which gives to it the name it bears, namely, the fact of its feathers being more like fine hair than is usual for plumage on all kinds of birds. This peculiarity is occasionally met with in other breeds of poultry, but only as a sport, and this is the case more especially in what are termed soft-feathered breeds, such as Cochins and other Asiatics. The appearance is very peculiar, and the bird looks almost as if it were covered with fur instead of feathers. A further peculiarity is seen in the colour of the skin and flesh, which is of a deep violet, almost black, whilst the face, comb and wattles are of a deep blue or purple colour, with legs and feet bluish-black. It is the only fowl which has colour of flesh or skin of this kind, and when cooked there is no more untempting bird to be seen. Looks no more make the fowl than does a coat the man, and the flavour of the flesh is excellent. The white, silky feathers relieved by dark, purple flesh make the fowl look like an old negro with white whiskers, and this explains why it is termed "Negros" or Negro fowl on the continent of Europe.

As to the origin of this fowl there is very little information. The breed is one whose habitat is undoubtedly the West and Southerly portions of Asia. After a considerable search Japan was found to contain few of the breed, while Singapore seems to have been a favourite port wherein to obtain these birds; there is no doubt that the raw specimens obtained abroad vary very much in colour of face and comb and silkiness, and in different countries where different standards are adopted we may find wide variations; feathers or rather silk on legs and feet is undoubtedly correct, for a study of Asiatic fowls with hocks show that such breeds are to be found with feathered legs and feet, and are exceedingly difficult to eradicate, while careless breeding, want of attention, etc., will reduce the beautiful silkiness of a good strain to harsh threads and feathers.

The cocks exceed the hens in weight; the standard says the weight should not exceed 3 lbs. to the hens 2 lbs., but in point of fact, many specimens are much under these weights unless very grossly fed, while thirty or more years ago the birds were larger. In both sexes the head should be short and neat, a slatey-blue beak fading in colour towards the point, and a deep purple comb and face, very dark eyes not covered by the crest, while the beautiful turquoise ear-lobe, a specially difficult thing to be obtained in the cocks, should be small and vivid; in the cock the lobe should be oval, in the hen more circular; failing the turquoise lobe a pure dark purple is considered next best, while a faded whitish lobe is not attractive. This point of turquoise lobe seems to be misunderstood. A Silkie may be a magnificent specimen and yet not have a blue lobe, while a bird with a blue lobe may be very far indeed from an ideal specimen, the biggest and finest lobes may be found in otherwise most unworthy specimens. Crests are another bugbear to the fancier; the hen's crest should be "like a Powder Puff," no hard feathers, not hanging too much over the eye—and while it should be full it should not be "wild" in appearance, nor too large, but a largish crest would be a reasonable counterbalance for a very broad silky saddle and cushion. In the cock, too small a crest gives a mean appearance; it should be soft and full, "as upright as the comb will permit," having a dozen or so soft silky streamers gracefully bending backwards from the lower and back part of the crest, about one and a half inch long. The cock's comb should be broader than long, purple black (no reddish tinge), surface rough,



Silkies—Cock and Hen.

but symmetrical, with a dent or hollow transversely across the middle. The hens have a minute comb, hardly showing below the crest. Wattles in the cock should be concave, purple black, nearly semi-circular, and long and pendant; the hens sometimes show small wattles, which should be in proportion to the comb. The necks in both sexes should be comparatively short, broad and full at base, and the hackle full and as silky as possible.

In the cocks the carriage should be stylish; in both sexes broadness of body and lowness on legs constitute great beauty when the silk is so abundant and soft as to touch the ground, and the lead-coloured legs and feet are fringed with soft silky plumage. In such birds it is allowable for a superabundance of fluffiness to be found at the hocks, but there must be no hard feathers which would constitute vulture hocks, and such is deemed a serious defect. The shoulders in both sexes should be broad, well-covered with hackles, back short, saddle broad and silky; the hen's cushion should be very silky and well furnished, the plumage nearly smothering the short tail, the extremities of the tail feathers being "ragged." In the cock the saddle feathers should well cover the root of the tail; the tail feathers should be comparatively short, well curved, as soft as possible for feathers, the ends of feathers being ragged. Sickles are allowable, but a short well-curved compact stern (the Cochin type of tail, in fact) is preferred. The stern in both sexes should be very broad and curved, with very fine silk. The wings should be silky down to the flights, the ends of these flights being very ragged. In some very good specimens the plumage in the wing is so soft as to droop downwards in places. This condition was termed by Mr. Harwood "Osprey" plumage, and is considered excellent.

The thighs should be set wide apart and covered with very fine silk, the legs short. There should be five toes on each foot set like the Dorkings, although the same value is not attached to minor defects in the Silkie feet as would be to the Dorking. The legs and feet should be lead colour, the nails bluey-white; plumage snow white in the Whites. Other varieties have been formed by crossing, but are not accepted by the Silkie Club. Deep violet skin should exist in all. The great *desiderata* are silkiness, colour of face and comb and five-toed feet, with, of course, the broad low type overshadowing all.

Silkies bear confinement well; being of contented disposition they seem happy in very small premises, and thrive and do well where a great many bantams would mope and pine away. They are very liable to scaly legs, and more particularly when their run is damp. This is really the only complaint made against this little variety, and as this can be so readily prevented it should never deter anyone from keeping them.

Silkies are good layers, and considering their size the eggs are bigger than would be expected. They range in colour from pale cream to a deep fawn, and are very delicate in flavour. The shells are particularly brittle, and need very careful handling, and require to be sprinkled with warm water a day or two before they are expected to hatch, or the shell will often peel off in the last hours of incubation, leaving only the membrane, which generally gets so crushed that the chicken is thereby killed. The eggs are nearly always fertile, and the chicks very strong and hardy. Some are hatched quite white, others almost buff, but the latter generally end in being quite as white, or even whiter than the former.

In mating up Silkies for breeding a two-year cock and pullets, or a cockerel and two-year-old hens, should be mated to birds all of the same age. Those with the most perfect points obtainable would naturally be selected, but a pale-combed specimen should never be used, however perfect in other respects. The dark head and wattles are a distinctive feature of the breed, and must be preserved, and as some strains will throw chickens with almost red combs, when once a good, dark-headed specimen has been procured, it should be zealously preserved. Leg feathering never seems difficult to produce or perpetuate, and the five claws come with more or less certainty in well selected stock. The chief difficulty is with the crests and combs, and those should be the first points aimed for, always provided, of course, that the birds are really silky, and devoid of all hard feathers.

There was a time when Silkies had successful classes at some of the larger exhibitions, but these have been discontinued from lack of support.

SINGEING (*see* " Marketing ").

SINGLE COMB (*see* " Combs ").

SITTERS (*see* " Breeds ").

SITTING (*see* " Clutch ").

SIZE OF EGGS (*see* " Marketing—eggs ").

SKIN, DISTENDED (*see* " Emphysema ").

SLIPPED-WINGS. When some of the flight-feathers grow wry or twisted.

SMALL HOLDINGS AND ALLOTMENTS. The Small Holdings Act of 1907 is of vast importance to poultry-keepers generally, and it marks a step in the right direction. The present Act is by no means the first attempt that has been made in this country to solve that most difficult of all agricultural questions, the retention of the labourer on the land, and the giving to him of an opportunity to improve his position in life. The failure of the previous Small Holdings Acts was largely due to the fact that the administrative power was placed in the hands of the County Council, who, besides appointing a Small Holdings Committee, did nothing at all, and this notwithstanding that petitions were presented in no fewer than twenty-seven counties from those desiring small holdings. When the Act was first passed there were many who would have had us believe that there was practically no demand for small holdings, but this has not been the case and in all parts of the country the movement is making great and rapid headway. Until within comparatively recent years, the great majority of the holdings in this country were in the hands of large tenant-farmers, whose one idea in life seemed to be to increase the number of their acres, even though in many cases it meant the squeezing out of the small man. Nowadays, however, we find that, scattered up and down the country, there are large numbers of unoccupied farms, consisting of several hundred acres, farms that until recently were much sought after. Notwithstanding the fact that in many instances the rents have been considerably reduced, the farms still remain untenanted, and the landowners adopt the extremely foolish method of allowing their farms to be vacant rather than split them up into small holdings, apparently regardless of the fact that by so doing they would actually receive more rent than under the old conditions.

On the Continent of Europe small holdings have been in existence for many years, and in the countries where the land has been split up into small allotments we find that utility poultry-keeping has made the greatest progress. Particularly so is this the case in France, Belgium and Denmark, where the average size of the farms is not more than twenty-five to thirty acres. Many of the holdings, however, are not nearly so large as this, consisting of only about ten or twelve acres. There is little doubt but that once small holdings become more universal in this country, we shall immediately see a great and lasting impetus given to the industry as a whole, which cannot fail to have the most beneficial results. In a great many districts, where the land is at present occupied by a few large farmers, poultry-keeping is merely in its infancy, owing to the fact that the farmer himself is not interested in the subject, often considering it altogether beneath his august notice, while he prohibits his labourers and those working for him from keeping any fowls at all. Vast areas in this country can be traversed without seeing any poultry; but once small holdings become more plentiful, a very different state of affairs will exist, as everyone then who farms a few acres will naturally be anxious to keep some fowls.

In selecting a small holding for poultry-keeping there are many important factors that should be taken into consideration, and much of the success achieved depends very largely upon the suitability of the holding. It should be the aim, when taking a place, to endeavour, as far as possible, to find one that will be suitable when the enterprise grows, as there are many cases in which the small holding was eminently suitable to commence with, but which was too small, or possessed some other fault, at the end of a year or two, when it was seen that the undertaking was going to become a success. So far as possible, one should endeavour to make the arrangement that if more land is wanted in the immediate neighbourhood there will be no difficulty in securing it. Soil and location are both important matters to take into consideration, particularly if one intends to go in for winter hatching and rearing. For several branches of industral poultry-keeping, the nature of the soil and situation are not of vital importance; but for others they must be seriously reckoned with, otherwise failure and loss are almost certain to ensue. Several small holdings have failed to pay merely owing to the fact that the soil was too heavy, perhaps, and the situation too cold and exposed, or else that other conditions were unfavourable. The ideal place for rearing chickens is on the slope of a good meadow facing south or south-east; but there are few who are fortunate enough to possess so advantageous a spot. Then, too, it is always well to have a small wood or copse, which affords excellent protection both from the sun and wind. During wet weather a wood should be avoided for young stock, as it is always so damp; but when the weather is hot, and the earth dry, there are few things more valuable to the chicken-raiser than a small copse. A good water supply is also of importance, as, if the birds are able to secure for themselves what drinking-water they require, it will represent a very great saving in labour, besides which the danger of dirty drinking vessels is entirely obviated. Another matter that requires consideration in selecting a small holding is its distance from a town or from a station on a main line. It is a mistake for those who are going in for utility poultry-keeping to select a place miles from anywhere, as the question of conveying the produce to the station, and of fetching foods, litter, etc., therefrom is an important one. There are many small holdings being offered which are, for all practical purposes, out of the world, and, except in special cases, these places should be avoided. It is true there are certain branches in which it is not so vital a matter, but generally speaking, one is seriously handicapping oneself by taking up a holding several miles away from a railway station.

There are many branches of industrial poultry keeping that make a very strong appeal to the small holder, and the difficulty that he has frequently to face is which he should select. Upon his choice so much depends that this matter should receive careful thought. There is no more important branch than egg production, and, under favourable conditions, it is one of the most lucrative there is.

Particularly is this the case when the bulk of the eggs is produced during the winter months, when they are scarce and, consequently, expensive. Closely allied to this branch is the production of eggs for hatching purposes, and so long as the parent stock are true to type, and possess valuable economic characteristics, an excellent price can be secured. For supplying this trade, winter eggs are not of such necessity as when they are for edible purposes, as there is little demand for them for incubation before about the middle or end of February. At the same time winter eggs should be aimed at, as, if there is no demand for such for breeding purposes, they always fetch a good price for eating. This is a branch that can be carried out very successfully upon quite a small holding ; and the profit from even only a couple of breeding pens of reliable and true-to-type stock is by no means inconsiderable. If the small holding is within easy distance of a town, or of a station with a good connection with London, fattening is a branch that may be taken up very profitably indeed. If, however, the holding is miles away from anywhere, then it is unwise to attempt this branch, as the conveyance of the birds to their destination and the cartage of the foods, etc., to the farm reduce the profits very materially. There are scores of fatteners in Surrey and Sussex who are making very comfortable livelihoods from this work, while there are several who have made sufficient upon which to retire. A great advantage that this branch possesses is that operations can be carried out on a very extensive scale upon an exceedingly small space, providing the supply of lean birds is adequate to the demand. A branch that offers great advantages to the small holder is the sale of newly-hatched chickens. This trade possesses several advantages, both to the purchaser and seller, and it has made great headway in this country during the last few years. Geese and turkeys are unsuitable to the small holder, as both require a large amount of space and cannot thrive well in confinement. If it is possible to make arrangements whereby the birds can have the run of a large meadow, then these kinds of poultry may be kept, but not otherwise. Both quickly taint the ground, making it bad for other kinds of poultry, while they themselves do not thrive at all satisfactorily. The rearing of ducks, on the other hand, is quite a suitable branch, and can be carried on successfully on a very small area. Many of the " duckers " in Buckinghamshire and Bedfordshire have very small places indeed ; one man, who annually rears and markets about 2,000, has less than half an acre of land. Ducklings are notoriously easy to rear, and the percentage of mortality is extremely low ; the turnover of capital is rapid, as the ducklings are ready for killing when about eight or nine weeks old. Operations can be commenced with only a small outlay, and the prices obtained are high, provided the birds are marketed fairly early in the season, before the glut begins.

The selection of a breed is an important question, affecting, as it does, so intimately the success or the failure of the enterprise. The variety chosen must, of course, depend upon the branch that is being undertaken, and the suitability of the particular locality, some breeds being so much hardier than others. For egg production the Minorca (black) and the Leghorn (white), cannot be beaten. The latter is rather more hardy than the former, and in cold or damp places is therefore rather more suitable. If table chickens are to be specialized in, then a breed belonging to the table class would naturally be chosen ; and the choice in this direction is a much more limited one than in either of the other classes. If the place is favourably situated, the Dorking is *par excellence* the fowl to keep, as no other variety possesses such splendid table properties. It is, however, rather delicate, and cannot stand adverse surroundings. The Sussex runs the Dorking very close, and possesses a sounder constitution. The Games possess a wonderful breast development, but their flesh is of a bright yellow colour, which is a point against them in this country. They are, however, invaluable for crossing purposes. Good crosses are Indian Game—Dorking, Indian Game—Buff Orpington, Buff Orpington—Dorking, Indian Game—Faverolles, and Dorking—Faverolles. As a general rule the General Purpose breeds are the most suitable for the small holder, combining as they do both laying and table properties. Hens of this class are our most valuable winter layers, producing the bulk of their eggs during the winter months. The two best General Purpose breeds are the Orpington (black and buff), and the Wyandotte (white, buff and silver). The Plymouth Rock, too is a valuable breed.

The important questions of feeding, housing, marketing and co-operation, all of which are of the most vital moment, need not be discussed here, as they are dealt with under their separate headings. (*see also* " Legal.")

SOCIETIES (*see* " Organization ").

SOFT CROP (*see* " Crop, swollen, etc.").

SOFT EGGS (*see* " Eggs, abnormal, shell-less ").

SOFT FOOD (*see* " Feeding ").

SOILS AND SITUATIONS. That the influences of soil and situation are not always fully appreciated at their true value, or even in many cases regarded as having any significance in relation to poultry-keeping, is only too evident. It thus happens that amateurs endeavour to keep fowls of a given breed upon a soil and in a situation inimical to their well-being, although perhaps another breed would thrive under similar conditions; and in the same manner the attempt is often made to breed gallinaceous birds and waterfowl indiscriminately, regardless of the fact that all will not do equally well amid the same surroundings. Although at the present time the great increase in the number of fanciers has done much to widely distribute fowls of all varieties, and these are more or less successfully kept under most opposite conditions—chiefly on account of the exceptional nature of the management of such breeders, it will have been noticed by the more observant that the older stocks of the more commercial producers tended to form broadly-defined groups that in some measure became identified with certain localities—production becoming to that extent influenced by soil and situation. The evidence of this tendency exists in the territorial nomenclature of many breeds and varieties, although it must be admitted that the mere name of a breed is by no means in every case of such significance: nevertheless, such descriptions as the Aylesbury duck, the Sussex fowl, the Norfolk turkey, are sufficient examples for our purpose to show the connection that exists in some important instances between types and localities—otherwise soils and situations. It consequently follows that in such cases, where a particular description and breed has been evolved through a succession of generations, from fowls that have proved to be most generally adaptable to any particular soil and situation, it is more likely to prove a profitable producer in similar circumstances than a breed that has become closely connected with a different set of conditions. On the other hand it may be fully admitted that the disadvantages of some soils and situations may be counteracted by those who have the necessary knowledge and ability, just as our forefathers must have encountered and overcome many difficulties in the early days of domestication, as is evident from the widely different sets

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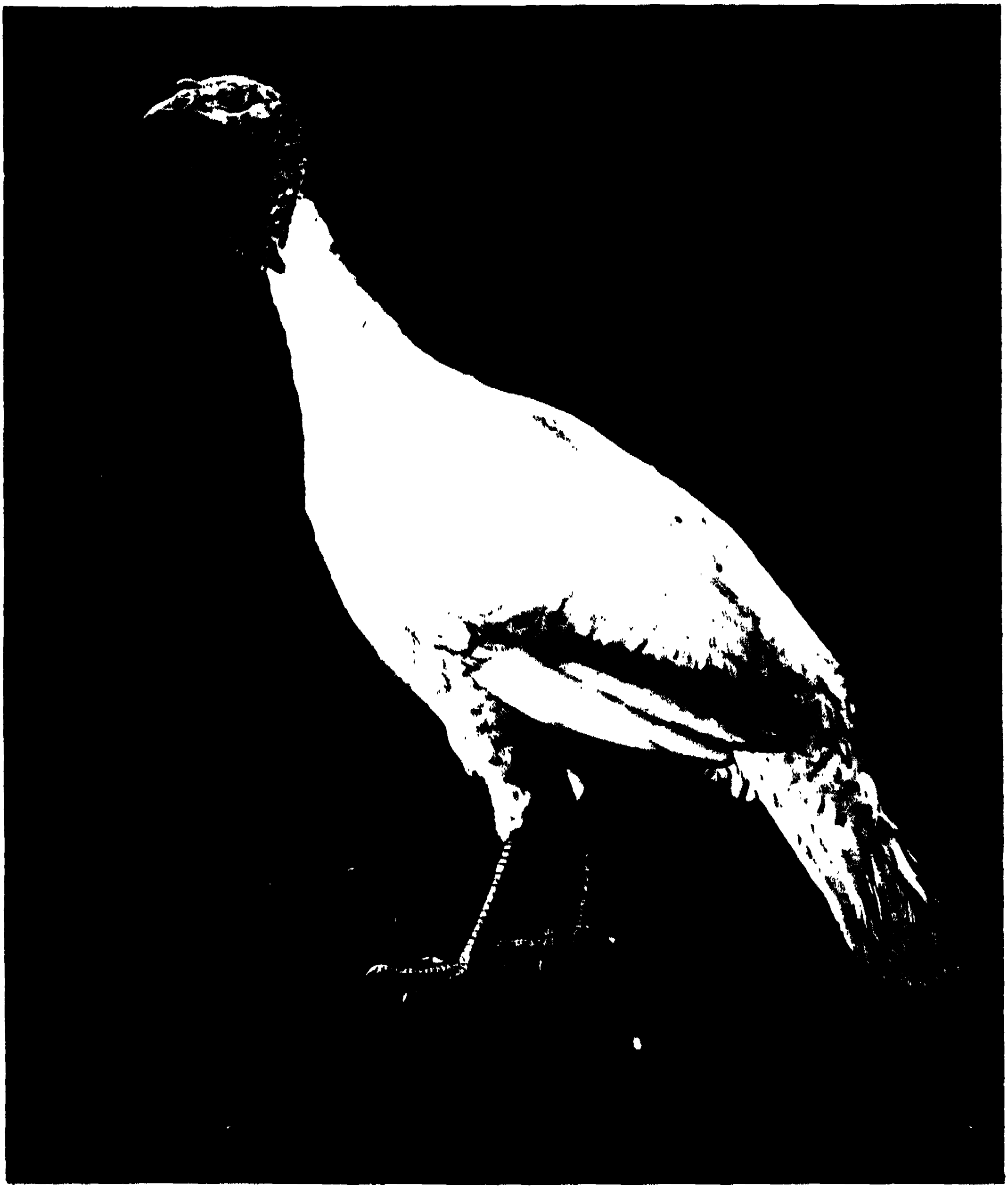

White Austrian Turkey Hen.

(The property of Lady Harlech, Brogyntyn, Oswestry.)

Winner of 2nd Birmingham, 1908.

of conditions under which poultry may now be profitably maintained in comparison with the native ranges of the species from which the domestic races originated.

It must be remembered that soils may be sandy, clayey, calcareous or peaty, but that their physical qualities do not depend entirely upon their composition —they are affected by depth, and the quality of the subsoil or that mass of earth immediately beneath that remains unmixed with decayed vegetable matter. If soil and subsoil are both retentive or both porous, it is evident that dryness or moisture must be correspondingly increased; just as the opposite characters of soil and subsoil will tend to a counterbalancing result. It is, moreover, necessary, in this connection, to consider climate in relation to soil, as regards the retentive or porous nature of the latter and the moist or dry character of the former; and the completion of the subject would involve such questions as drainage and irrigation, subjects beyond the scope of the present purpose.

As an example of the influences indicated upon the possibilities of successful poultry-rearing it is interesting to note that the Sussex fowl (which typically illustrates the trend of these notes) is the product of a district including parishes of which some are mostly loam, some sand, some clay, with various mixtures ranging from light to stiff. In some portions there is sand with a clay subsoil, and in others the position is entirely reversed; yet despite the disabilities of some divisions, the general situation and physical conformation is almost ideal—and the Sussex fowl is the result. Again, if we take the turkey we find that the most important English home of this bird is situated in a reasonably dry climate (for England), and upon a soil that consists chiefly of light sands and loams; and turkey breeders will recognise the fact that success upon a given soil is largely influenced by the climatic character of a season, a sandy soil being preferable in a moist season and heavier land more suitable in a dry summer. The "White English" duck, as it was once called, is now universally known by the name of Aylesbury, that fertile vale in the centre of Buckinghamshire, characterised by the sandy gravel of its streams—the general situation and conditions having so strongly influenced local production that the older name of the breed is now only a tradition. Nevertheless, however much a particular bird may be suited for a particular soil and situation, the various influences of domestication are sufficient in many particulars to overcome what would be natural difficulties, and even in a wild state apparent contradictions are by no means rare—so that in the words of Darwin "it will cause no surprise that there should be geese living on dry land."

The novice is often perplexed, once the question has arisen, as to the best breed foı a given soil and situation, and although the answer must always be to some extent relative to the conditions as a whole, the following indications are based upon the general average experience of breeders of the several breeds—subject to individual possibilities and limitations. The breeds that have been found to thrive in a great variety of situations, and upon almost any soil, include principally Old English Game, Langshans, Leghorns, Minorcas, Orpingtons, Plymouth Rocks, and Wyandottes—the last named differing in the several varieties in this respect. Fowls that do best upon a fairly dry soil are Anconas, Andalusians, Brahmas, and Dorkings. Such French breeds as Crêve-Cœurs and La Flèche require a warm climate and a dry soil for the attainment of the highest results, and it may be noted that the Houdan thrives more especially upon a calcareous soil. In general it is found in practical production that a good rich soil is preferable for all ordinary purposes, and will meet the requirements of a wider range of stock than any other;

that heavy soils necessarily limit the possibilities, as regards the descriptions that can be kept thereon profitably; while in other cases a light soil is required, some few breeds never really thriving upon any other. As a matter of fact, there are but few localities in the British Isles in which soil and situation are entirely unfavourable to poultry production of some description, although the extent to which production may be profitable is in a measure dominated by the character of the soil, as is the breed that it will best carry, inasmuch as a light sandy soil remains sweet much longer than clay or heavy land, and will consequently accommodate a larger head of stock—or for a longer period. Yet even upon heavy lands and at high altitudes, where it would be difficult to breed table poultry of sufficiently good quality, eggs may often be largely and profitably produced.

SPACE, NECESSARY (*see* "Accommodation").

SPANGLED. When the feathers have a spot at the end of a different colour from the ground.

SPANISH, WHITE-FACED BLACK. Of all the breeds and varieties of fowls few can show a longer lineage, or lay greater claim to the term "pure bred," than the White-faced Black Spanish. Their origin lies far back in the history of the pure-bred fowl, and they were an old-established breed far back of the memory of our oldest fanciers. At one time the Black Spanish was the largest of the Mediterranean breeds (the Minorca not having made its appearance), and was also considered to be one of the best layers of any variety, with eggs of more than ordinary size. Its good size, prolific laying qualities, together with large size of egg, established its merits as a fowl of strong utility qualities, and it was a favourite with a large class of fanciers. The White-faced Black Spanish of to-day is a bird of similar character to the Black Minorca, but has somewhat shorter lines, and is lighter in weight. Its distinguishing feature is the white face, a characteristic which has given it the name. It is a feature possessed by no other variety of fowls. It was given much attention by fanciers and its development reached a stage that was truly remarkable; in fact, it was overdone and the breed suffered a loss of popularity in consequence. The white face, when not carried to extreme development, is an attractive feature; where the faces of other varieties are red, this bird has white that is of the same character as its ear lobes—which is the same as the ear lobes of the Minorca and other members of the Mediterranean family. This quality of white should be the same throughout, extending over the entire face, joining with the ear lobes and arching over the eyes, forming a smooth, unbroken surface of pure white. The ear lobes should be very large, extending well backward, and hanging down low, with the lower edge well rounded, so that the whole will form a long, broad surface of pure white.

The colour of the plumage should be a beetle green, free from purple bars, a deep, rich black that with its greenish sheen makes a plumage of great beauty. It is also a plumage that is not easily produced, being subject to the general faults of black plumage, such as purple barring and a lack of lustre. It may also lack in depth of under-colour. To be perfect it must be a colour of life and brilliancy, a colour that is not found in the plumage of birds that are out of condition, as a weak or diseased body cannot give its plumage the kind of nourishment necessary to bring out its best quality of colour.

In the days of its greatest popularity this breed of fowls was of strong, vigorous constitution, and its utility and fancy qualities easily produced. Later, the matter of hardiness and vigour was not given the attention that its importance

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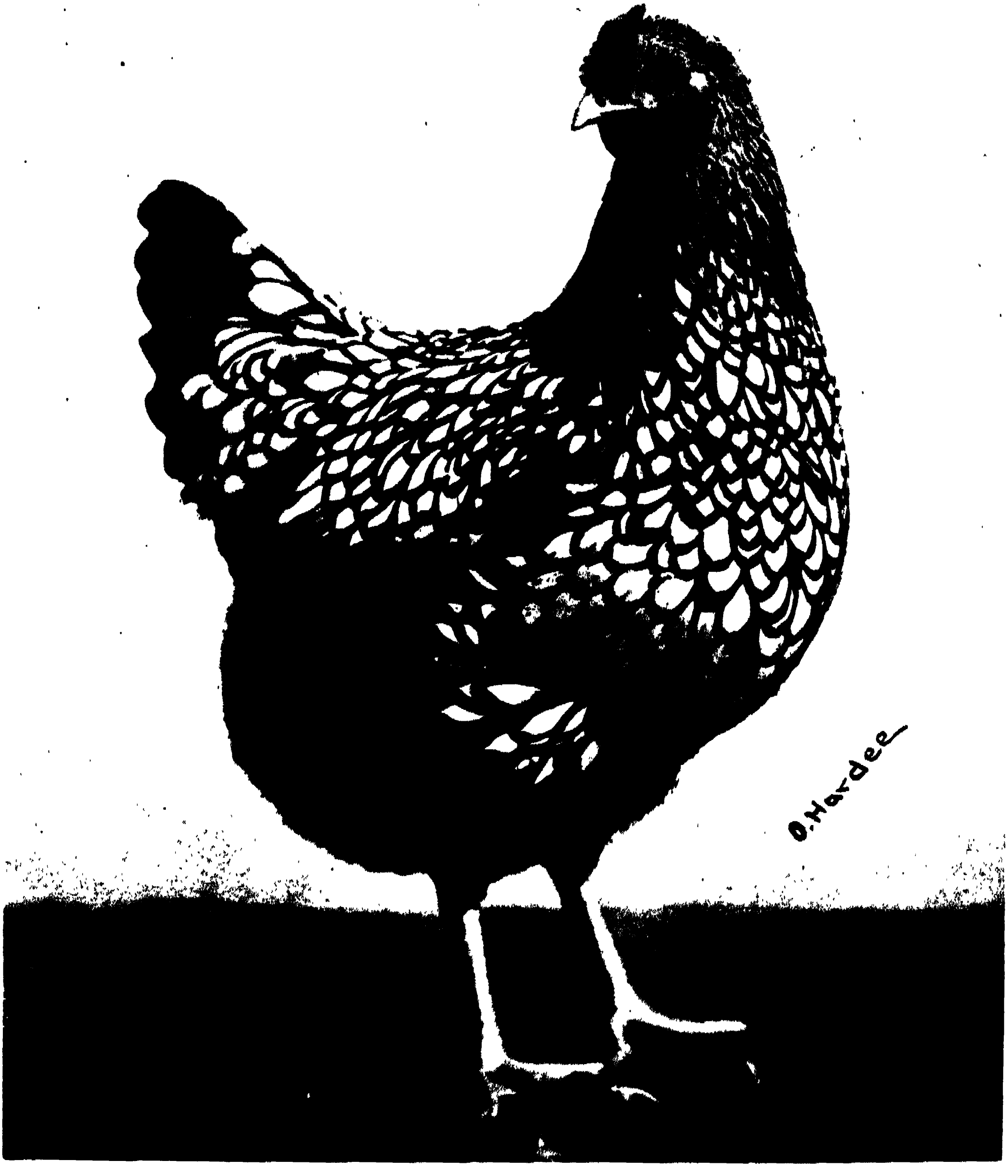
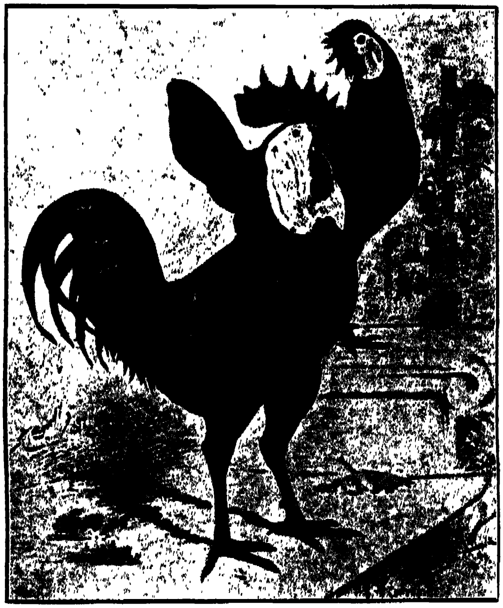


Silver Laced Wyandotte Pullet.

deserves, and, as a natural consequence, the good old breed declined in popularity. This, at least, is the reason given by friends of the breed for its loss of popular favour.

We doubt, however, if this is the real reason, or the only reason, as we have seen some fine specimens within the past few years that would, by reason of their abundance of vigour and vitality, as well as strong exhibition quality, refute such an argument. These birds were grand specimens of the breed ; had abundant size, fine colour, and excellent face quality ; birds that would attract attention anywhere and cause one to wonder why they were not more extensively bred. We believe that the advent of the Minorca has had much to do in decreasing the annual production of Black Spanish. The Black Minorca is a bird of much the same character, in that it lays a large white egg, and many of them, and is a bird of good size, even larger than the Spanish, and easier to breed in the matter of head points, as it is easier to breed a red face and white ear lobes than to breed the white face of the Spanish. Then the increase in the varieties of the Leghorn family, the advent of the popular " American varieties," all helped to lessen the attention given to the Spanish and the Asiatic varieties. It is a case of the new crowding out the old, or perhaps, better to say, the old dividing popularity with the new. It is a fact that many breeds and varieties are not bred to the extent that they were at the time of the Spanish, as in the case of the Games, the Asiatics, the Hamburgs, etc. And it is not because such varieties have declined in practical or fancy qualities, but because the advent of the newer varieties, and the work of bringing them toward perfection, has taken such a hold upon our fanciers as to cause them to rather lose sight of the old favourites.

There is an element of the " practical " to be found in the average fancier, and we have wondered if the white face of the Spanish may not have been a reason why the bird is not bred more extensively. The Black Minorca seems to be much more of a favourite and it may be that the white ear lobe is about all that the average fancier can admire in a bird, along that line of adornment. The white face, like the white ear lobe, is a feature that requires more than ordinary care to keep in anything like good show condition and the life of the bird in the average quarters is not apt to lessen the difficulty, so the bird will be an exception that reaches its second show season without accident to the white of face or ear lobes.



White-Faced Black Spanish.

The formation of a strong Black Spanish Club would do much to bring the breed back to its old-time popularity, as an energetic club can do more to advance the interests of any variety than any other influence. The largest classes at the poultry shows generally attract the most attention, and the breed or variety of fowls that is brought into greatest prominence by the efforts of its friends and admirers is certain of being taken up by many people, simply because of its apparent popularity. It is a trait of human nature to be attracted by that which seems to have a strong attraction for others, and the breeders of the Black Spanish, by forming a strong, active club, could advance the interests of the breed very materially. There would be no need of manufactured evidence to prove the real worth of the breed, as its history would be one long testimony as to its good qualities, along both practical and fancy lines. It is a beautiful bird in both shape and colour; a bird of striking appearance and truly a member of the "aristocracy of fowldom," with a lineage that entitles it to the highest rank as a thoroughbred fowl. It would seem as though it had all the qualities necessary to make a popular fowl; the utility quality is there, and certainly the fancy quality is of a nature that appeals to the fancier who likes to find some difficulties in the breeding problems of a breed.

If by reason of inattention, or any other cause, the breed has been allowed to become reduced in vigour and ruggedness of constitution, careful breeding will bring it back, and the Black Spanish will again become one of the most popular of the Mediterranean varieties. It requires careful work, upon the part of the breeders of any variety, to develop its utility and fancy qualities to the point where their excellence is bound to win favour, and it is for the breeders of the Black Spanish to put their shoulders to the wheel and advance the breed to a higher place in the estimation of the poultry public, to regain for them the popularity that was once theirs, and of which they are deserving by right of real merit, that has stood the test of many years. It seems as if such a grand old breed should not have been allowed to drop down to the place that it now occupies, and we hope to see its breeders band together and make every effort to advance it to a place more in keeping with its merits and its place of honour in the history of pure-bred fowls.

SPECIES. A group inferior to genera, but superior to varieties (*see* "Origin").

SPICES, STIMULANTS AND TONICS. The number of different spices and condiments given to poultry for stimulating and tonic purposes is legion. Most of these are given to aid in egg-production, while others are rather of a medicinal character and may be considered in the light of physic. The opinions of different authorities vary very much as to the advantages and disadvantages of giving spices and condiments to poultry to promote laying. On the one hand it is urged that poultry need a stimulant, especially in winter time; on the other hand it is pointed out that the tendency of all such spices, etc., is to cause disorganization of the liver, and thus to do more harm than good. A middle course would appear to be the correct one. If poultry are to be made to pay they must be forced to some extent; and if the poultry-farmer would also keep in mind the well-recognised principle that it only pays to keep hens for laying until they are two-and-a-half years old, he need not have much fear on the score of liver complaint. The real point to consider is what is a suitable spice or condiment to promote laying? Things like cayenne pepper merely cause internal irritation; they do not, and cannot, promote warmth or stimulate the egg organs.

Eggs are a surplus product of the fowl's economy, and they are produced mainly as a result of the digestion of food, just as the fat in a prize-ox is due to a surfeit of food. The point to aim at, therefore, is to effect the digestion of as much food as possible while keeping the bird healthy. Now, certain spices, such as aniseed, cummin, fœnugreek and caraway are appetising, that is to say, they encourage the consumption of food. The four articles named, mixed in equal proportions, make an excellent " poultry spice," a teaspoonful of which added to the soft morning feed of about a dozen adult fowls will always act beneficially. But something more than this is wanted. The way to stimulate the egg organs is to nourish the blood: and the best blood nutriment is iron. The most assimilable form of iron is the saccharated carbonate, and if a little of this be added to the ingredients named above, the nearest approach to perfection in a poultry tonic spice will be obtained. The proportions should be two parts of each of the four spices and one part of saccharated carbonate of iron. With regard to the other tonics for poultry, the best general tonic for *chickens* is chemical food (Parrish's formula), which contains phosphates and other salts of iron and lime, and helps to build up the frame of the growing birds. This food is also very beneficial to older birds during the moult and at other times when there is a tendency to debility—also in wasting diseases. By way of a general tonic for ailing birds the capsules of cod liver oil and quinine are excellent: quinine is an invaluable tonic for poultry, being specially useful for ague—a complaint to which undoubtedly they are subject, and which (though they are unable to express the pain they feel) must be about when the feverish symptons so often seen in poultry are present. Iron and quinine, then, are the two most important tonics for poultry—the one as an egg stimulator and the other as a pick-me-up in cases of actual illness.

SPOTTED-BILL DUCKS (*see* " Waterfowl, ornamental ").

SPUR. The sharp point of horn on the heel of a cock; its weapon of offence.

SQUIRREL-TAILED. When the tail bends too much over the back (a disqualification in show birds).

STAG. The usual term for a cock turkey, occasionally applied to fowls.

STOAT (*see* " Enemies ").

STOCK, SELECTION OF (*see* " Mating ").

STRAIN (*see* " Breeding ").

STRUCTURE OF EGG (*see* " Eggs, structure ").

STRUCTURE OF FOWL (*see* " Anatomy ").

STUBBING. The removal of stubs and pin-feathers after plucking (*see* Marketing—dead poultry).

SUBURBAN POULTRY-KEEPING (*see* " Amateur Poultry-Keeping ").

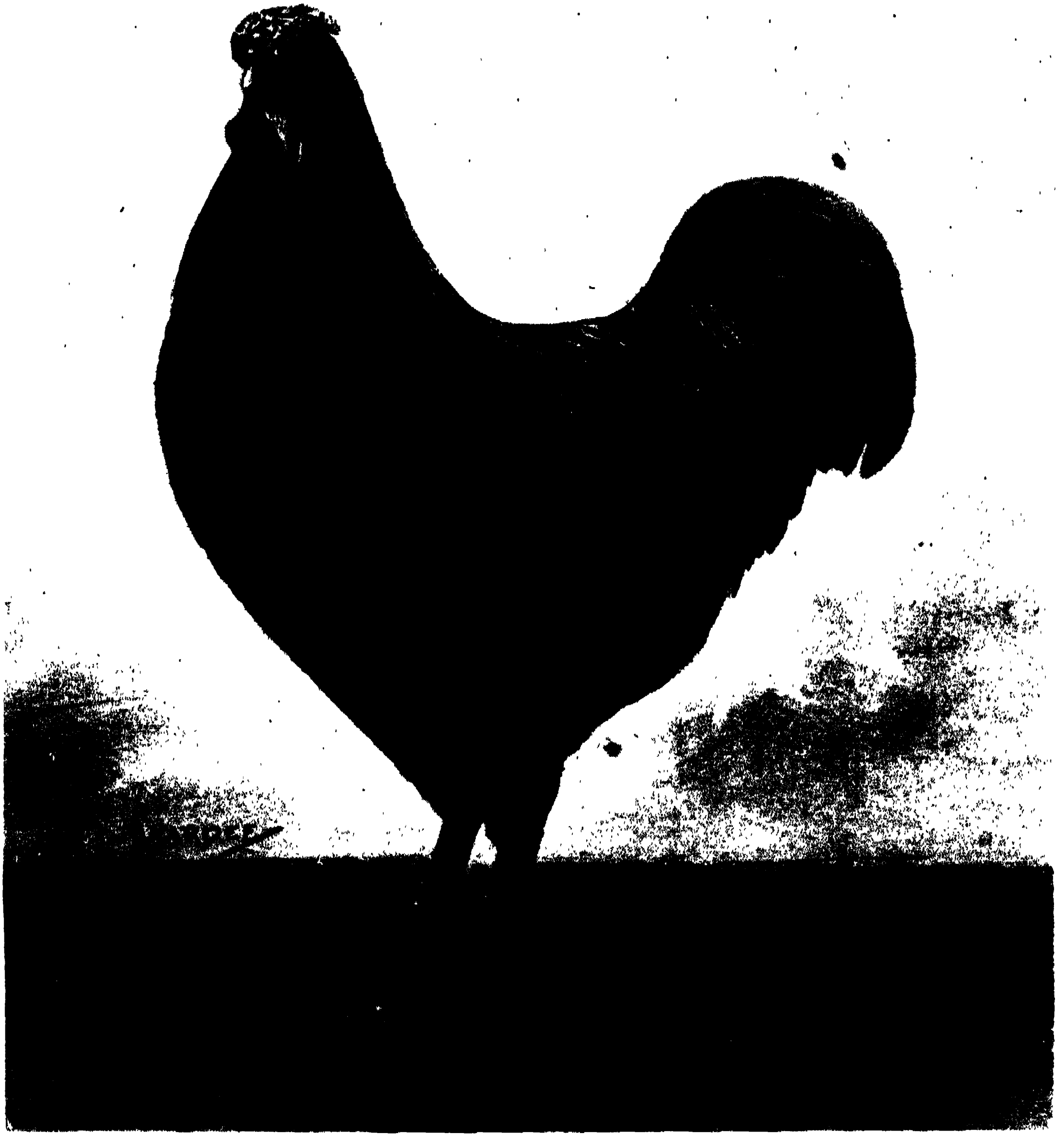
SULPHUR. Sulphur, in some form, is one of the things that the poultry-keeper should always have by him—it comes in very usefully for a variety of purposes. Together with phosphorus and lime, sulphur is an actual element of the fowl's body—an element which, taken in with food, plays its own important part in that body's internal economy. These are a few of its uses: For feather-eating flowers of sulphur can be used very efficaciously in the following manner: Slake two or three handfuls of lime, stir into it six ounces of flowers of sulphur, add two quarts of boiling water, and allow the mixture to boil for a couple of hours. Give it to the hens in their morning mash. Sulphur in the form of sulphuric acid is a component of the far-famed Douglas Mixture, which, during the moult, is always desirable, given in the drinking water. Sometimes it is more convenient to add simply sulphate of iron to the water—enough to give it a slight taste. For scaly leg one of the simplest of remedies is a mixture of flowers of sulphur and paraffin. A sufficient quantity of paraffin should be added to make a paste and the legs should be treated with it every day until the scales have peeled off. A stick or nail-brush can be used for pasting on the mixture. For layers and stock birds sulphur is a mild laxative, and if given occasionally to the laying and breeding stock it does no harm, but often a great deal of good. The easiest way of administering it is to mix in the morning mash—a handful to every twenty-four hens.

SULTAN. Of all the minor breeds of poultry there is none more beautiful than the Sultan, but, from a difficulty to keep it in good plumage, and that it is purely a fancy fowl, it does not secure or retain many breeders in this country. Yet we do not remember a time when there were not a few good Sultans at our leading shows, and, when exhibited in the variety class, they usually manage to secure a fair share of the prizes. As the name indicates, they have come to us from the East, and it is now nearly forty years since the first specimens were brought over. Miss Watts was the first importer, and gave the following account of them : " They were sent to us by a friend living at Constantinople, in January, 1854. With regard to the name he told us that they were called Serai-Tăook. Serai, as is known by every reader of Eastern lore, is the name of the Sultan's palace ; tăook is Turkish for fowl. The simplest translation of this is Sultan's fowls, or fowls of the Sultan, a name which has the double advantage of being the nearest to be found to that by which they have been known in their own country, and of designating the country from which they came. They rather resemble our white Polands, but with more abundant feathering and with shorter legs, which are vulture-hocked and feathered to the toes. In general habits they are brisk and happy tempered, but are not kept in as easily as Cochin Chinas. They are very good layers, their eggs are large and white, they are small eaters and non-sitters. A grass run with them will remain green long after the crop would have been cleared by either Brahmas or Cochins, and, with scattered food, they soon become satisfied and walk away.

Since the time referred to, many attempts have been made to secure fresh importations of this breed, but with few successes, as they seem to be bred to a very limited extent, and pure-bred stock are very seldom to be met with. This is to be regretted, as the importation of fresh stock is not only needed, but would have the effect of drawing others into the pursuit. Those which have been bred in this country are probably better than any to be found in the Ottoman Empire, as great attention has been paid to feathering and crests.

Sultan Hen.

PLATE No. 94



Golden Laced Wyandotte Cockerel.

(The property of Mr. W. L. Horbury, Elm House, Bromborough, Cheshire.)

Winner of 1st, Special for the best Cockerel in the show, and Cup for the best bird in the show, Tattenhall; 1st and Special for the best Wyandotte in the show at Chester; 1st Holmfirth; 1st Narberth; 1st Kendal, etc.

SUMATRA (*see* "Game Fowl").

SURPLUS STOCK, DISPOSAL OF (*see* "Marketing, Live Poultry").

"SURREY FOWLS." A trade description for the best produce of the Sussex fattening coops.

SUSSEX CHICKEN INDUSTRY, THE. The Sussex Chicken Industry is in its way unique, as an example of localized poultry production, around which kindred and supplementary trades have developed and grown, with the additional and characteristic distinction of profitable success to all concerned. Its history goes back many generations, and its origin to an unrecorded period; although it is known that the peculiar produce of the fatteners was conveyed to London by a special service of four horse waggons, three times weekly, long before the conception of the London, Brighton, and South Coast Railway. It is therefore obvious that such an output at that time is fairly indicative of an established industry, with beginnings in a remote period. The art of chicken fattening has very largely been transmitted from father to son, and large numbers of the inhabitants of wide South-Eastern districts are adepts in a work requiring considerable skill, one of the advantages of localization. Moreover, as a further indication of the antiquity of the craft, there are many families now engaged in cramming, which have no record of their ancestors except as chicken fatteners. In connection with this specialized industry the history of the Sussex Fowl is intimately associated, the two having been in a way complementary the one to the other; and for a detailed description of the fowl, so long appreciated in Sussex before its introduction to the fancy world, the reader is referred to the section, "Sussex Fowls."

The district in which the rearing and fattening of chickens has for so long been a remunerative occupation covers a considerable area, embracing those parishes in which there is an organized system for collecting the dead birds for despatch to the London markets, from the two chief stations of departure, *viz.*: Heathfield and Uckfield, and comprising some 75,000 acres. Outside the circle of this area, and around its borders, are many more rearers who represent an extension of the rearing branch of the industry, the fatteners being more centralized, as is natural in view of their dependence upon carriers and railway facilities. The district proper may be said to be bounded on the North by the Wealden Heights (in Ashdown Forest), and on the South by the South Downs, being practically confined to the country between; the Parishes chiefly concerned including Heathfield, Horeham Road, Warbleton, Dallington, Brightling, Burwash, Mayfield, Rotherfield, Buxted, Uckfield, Framfield, Waldron, East Hoathly, Chiddingly, Laughton, Ripe, and Chalvington. It has been estimated that the district more immediately concerned contains some fifteen hundred occupiers, of an average of some fifty acres each; among whom the industry is directly instrumental in circulating some £250,000 per annum.

It is probable that the nearness to coast and sea, in conjunction with the warm shelter afforded by the general situation of this wide main valley, and especially the lateral hollows and thickly wooded ridges, the deep cut lanes and thick hedges and shaws, have the combined influence of suiting the district to the needs of the early chicken rearer in a degree not elsewhere reproduced upon a similar scale of natural advantages. The district is situated geographically upon the Hastings Sands, an alternate formation of sands and clays with a preponderance of the former; in some parts, however, the formation is overlaid by a clayey stratum known as the Wealden clay, this latter belonging more especially to the flat stiff land along the foot of the

Downs, but becoming thin towards the East. Relative to the influence of soil upon the success of poultry production (*see* "Soils") it may be noted that the district includes parishes, some of which are chiefly loam, some sand, some clay, and others with a variety of mixtures from light to stiff. Indeed, five or six parishes consist almost entirely of unrelieved clay, with a subsoil of sand and gravel, including some of the most important portions relative to the numbers of birds annually reared; from which it must be concluded that success is mainly due to the skill and experience of those who have made the district the home of the industry—a district which although ideal in situation and conformation, yet suffers from disabilities in some of its divisions.

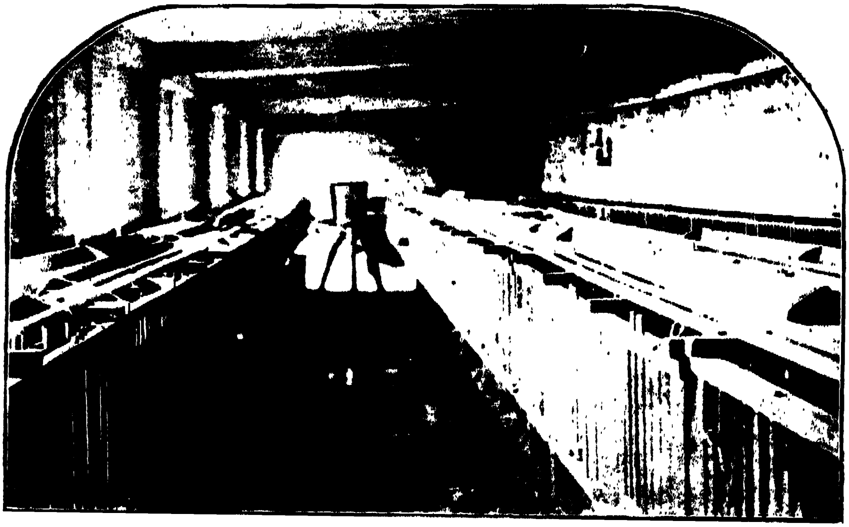
The industry is, as has been indicated, carried on primarily by small holders who are not in the popular conception of the term "poultry farmers," but are in fact the most practical farmers of fowls to be found in any country—being none the less so because their land carries (necessarily) four-legged stock as well as feathered. Those engaged in the work have specialized in the production of fattened fowls, and in most cases the work is divided between rearers and fatteners; the local millers producing a special meal for their use Sussex ground oats—(*See* "Feeding Stuffs"), and the local carriers and Railway Company organizing a special service for the collection and forwarding to market of the produce. The advantages of this division and dove-tailing of the labour are manifold. The methods employed in the various branches are both simple and effective, as the result of accumulated experience.

In almost all circumstances of rearing hens are employed, to the exclusion of modern artificial appliances; and the young broods of chickens are cooped in the open fields under the most variable climatic conditions, the keynote of success being the hardiness of the treatment and the consequent maintenance of stamina in stock and progeny. The young birds are reared almost entirely upon Sussex ground oats, with some admixture of sharps, the latter chiefly to facilitate mixing and produce the required crumbly character of the food; chickens so fed and reared reach a sufficient maturity for the fattener's purpose in from about twelve to sixteen weeks. When the birds are of a proper age and size they are collected from the rearers either by higglers or the fatteners' own collectors, the higgler proper being a dealer or middleman, although the term is rather indiscriminately applied in Sussex. The period of fattening occupies from three to four weeks according to the rapidity with which the individual birds respond to the process. (*See* "Fattening.")

As a result of systematized trading the birds change hands, from rearer to fattener, at practically uniform rates at the different seasons, subject to some modifications due to distance from the collecting centres; and within a wide radius the birds, when ready for market, are collected and forwarded, and the empty crates returned, at the reduced charges accruing from the heavy consignments of a centralized industry.

In addition to the very large numbers of lean chickens reared in and around the district, an import business in live birds for fattening has developed with Ireland, Wales, and several distant English counties, and has assumed very considerable dimensions, with important agencies and wide-spreading collecting ramifications. As an indication of this increase of outside supply it may be mentioned that during the whole of 1893 there arrived at Heathfield Station, 1,014 "tops" or crates of live chickens from Ireland; and that in the one month of March, 1904, no less than 863 "tops" were received there, and other imports from the various sources of supply have proportionately increased. As the natural result of weather, and other influences upon the work of rearing locally, this inward business is heaviest between the months of November and May. As a general rule the great bulk of the Irish birds are consigned to Heathfield, whilst the Welsh and other chickens chiefly arrive at Uckfield. The rate for the carriage of the live chickens from Ireland, *via* Holyhead to Sussex, varies from 5/10 per cwt. to 7/- per cwt., according to the destination; and as a further indication of the importance of this branch of the business it may be noted that one fattener alone pays from £80 to £100 per month for the carriage of Irish chickens. During the season 1905-1906, the fatteners of the district paid some £5,000 for the carriage of these birds, upon a total weight of over 700 tons. The Irish exporters consign their chickens in heavy wooden crates, each holding about forty-two birds. The through rate from Wales is from 5/- to 5/3 per cwt., and the Welsh chickens are now mostly carried in wicker "flats" or hampers, each holding thirty-six fowls.

The outward traffic is in the hands of the local carriers, and the birds are sent to market in "pads" or crates, constructed of willow frames and staves, and lined with deal boards; these hold twelve, sixteen, twenty, and twenty-four dead birds each. The uniform rate charged the fatteners, for transport by road and rail and the return of empties, is one penny per bird; the carriers chartering special poultry vans from the Railway Company, the railway tariff working out at an average of 1/- per cwt. Regular vans leave the local stations, attached to passenger trains, in the evening; and the fowls are sold in the open market early the following morning. The total output collected and forwarded through the recognised channels approximates to an annual weight of about 2,200 tons. At the time of the report issued in connection with the Royal Commission on Agriculture in 1894, the annual output was 1,840 tons; from which it will be seen that a steady progress has been made. Broadly speaking, the average weights sent from Heathfield fluctuate from five to seven tons per day, on the days of despatch; and from Uckfield, from three to five tons. The forwarding days in the first instance are, Monday, Tuesday, Wednesday, Thursday, and Friday; and from Uckfield, Monday, Wednesday, and Friday. From the smallest beginnings the industry has developed into an important and flourishing trade, the output of which steadily advances without any apparent present danger of the supply exceeding the



Indoor Fattening Pens at a Sussex Fattener's.

demand; and although prices are perceptibly lower (*see* "Values"), owing to the cheapening effect upon first quality goods as a result of increased foreign competition in other qualities, there is at recently ruling prices a sufficiently reasonable margin of profit. There is, moreover, reason to believe that the industry would bear further extension around its present limits and upon its own lines, but it is very doubtful as to how far it will bear imitation elsewhere, without more or less vital modifications as regards methods and values. In this case the demand met is of a special character, and one which is practically confined to London; very limited opportunities being afforded elsewhere as regards sufficiently remunerative prices. When consumers in general realize that a fattened fowl is better worth its higher price than a cheap lean bird, there will be more scope for imitators of the Sussex fatteners; but those who at present seek to educate the general public, will lose in two ways. Not only will the returns be inadequate, but the cost of production suffers from the disabilities of isolation in comparison with the many economic advantages of a localized industry, some of which have been indicated above.

Relative to the method of disposing of the produce by consignment to the London markets, for sale upon commission through the salesmen, it is obvious that the consigner places himself practically in the hands of these middlemen without any very satisfactory means of checking accounts of sales. It cannot, of course, be claimed that this is a commercially sound basis upon which to conduct a large business, and recent efforts have been made to introduce a system of limiting the freedom of salesmen; nevertheless, it must be admitted that the majority of those concerned prefer to continue the old method, which redounds to the credit of the salesmen as a whole. One great advantage to the consigner of the existing way of conducting sales, is the promptitude with which the produce is converted into cash, and the cheque for the amount due (less carriage and commission) despatched by return of post; this prompt and rapid turnover, with no delay for credit, is in most cases vital to the successful conduct of the fattener's business, who, in turn, pays cash down for every lean chicken he collects.

SUSSEX FOWLS. The Sussex Fowl is an old English breed, regarding the utility of which there can be no question, although its origin and early history is a matter of conjecture rather than certainty. This doubt is not only a more or less common penalty of ancient lineage, but is in this case accentuated by the fact that the breed has been almost entirely in the hands of a small section of commercial producers from time immemorial, and has only quite recently received any official recognition. Although it has for so many generations been bred to the standard broadly defined by an important section of producers of table chickens, it is only since 1903 that it has been bred to a standard including such externals as colours and markings. Nevertheless, such records as are available serve to show that the Sussex Fowl was recognised as distinctive by some of our older authorities, although in their writings they have referred to it under two or three different names; moreover, such descriptions as they attempted sufficiently indicate that the plumage, as well as the general type, has in some particulars tended to broadly follow certain well-defined lines. In many important essentials it can claim to a "purity" at least equal to other old English breeds, and it stands in a very different category from the avowedly manufactured breeds of recent exploitation. Although its fame as an exhibition fowl has still to extend in many directions, it is only a new breed as regards the fancy. It was known to utilitarians before the birth of the modern fancy.

Whether the Dorking or the Sussex

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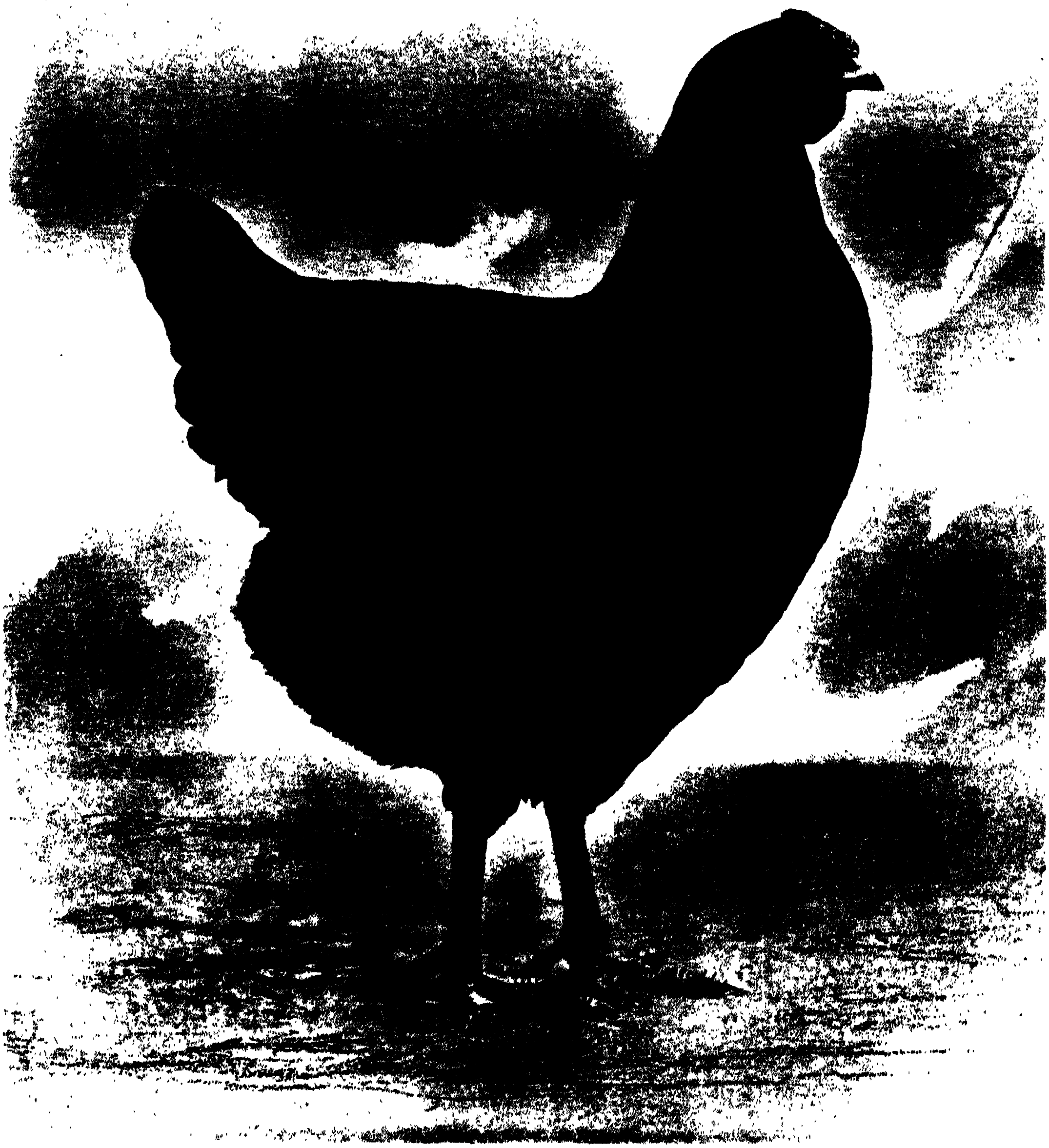


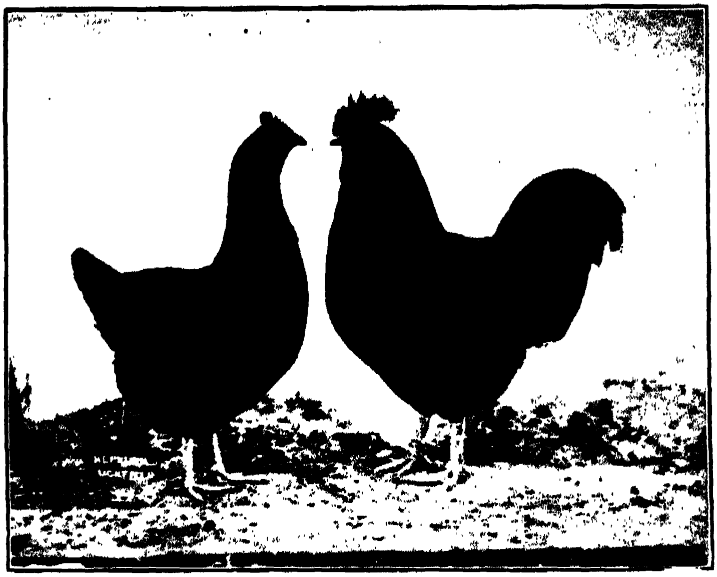
Golden Laced Wyandotte Pullet.

(*The property of Mr. W. L. Horbury, Elm House, Bromborough, Cheshire.*)

Winner of 1st Chester, 1st Tattenhall, 1st Narberth, etc.

fowl can claim precedence of origin, whether (and if so, to what extent) the one is indebted to the other, and whether or no the introduction was coincident with the Roman invasion, are perhaps debatable points; but the fact that they are so, and that the old Sussex Fowl corresponds very closely to the type of bird most approved in Ancient Rome, is a reasonable indication of a respectable antiquity.

As recently — in comparison with ancient history—and as far back relative to modern developments, as 1845, the classification of the first poultry show held in that year in the gardens of the Zoological Society included (under the general heading of Domestic Fowls) as distinctive descriptions, and additional to Dorking, both "Surrey" and "Kent" fowls. There is no doubt that both these descriptions refer to the same stock that is now more reasonably (in view of the economic connection) and comprehensively known as "Sussex." Indeed. Mr. Harrison Weir—who was at the show held in 1845—confirms this suggestion in a letter written in 1904, wherein he speaks of the Sussex as the "Southern Old English Fowl," which he had found "throughout Kent, Sussex and Surrey," and which he affirmed to be "*centuries* old." Moreover, and entirely apart from the dicta of well-known authorities, it is an incontrovertible fact that the breeders and fatteners of the south-east have for generations known the breed under consideration as the "Sussex Fowl," and by no other name. However, the date that is of importance for the fancier and exhibitor is that of 1903, when the Sussex Poultry Club was formed at Lewes, a standard of perfection was drawn up for three varieties, and the new career of this old breed commenced in the show pens of the Lewes fanciers' show in the autumn of the same year—the more general introduction to the fancy world taking place in 1904, at the "Royal" and the "Grand International." It is the avowed intention of the club to safeguard the economic qualities of the breed, and the standard was originally drawn up and has since been amended in accordance with this object; and it is noteworthy that since its introduction to the notice of poultry-keepers in general, the breed has been enthusiastically taken up by producers and fanciers in all parts of the world.



Red Sussex.

The connection that has so long existed between the Sussex Fowl and the Sussex chicken industry is so well known as to need no more than a passing reference, but it may be stated *en passant* that the high value of the breed for utility purposes owes much to the work of a long line of southern breeders who have maintained

Speckled Sussex.

of back, a proportionate length of body and width of shoulders, with short and stout legs, well-defined thighs—set well apart. Between forty and fifty years before the official standardization of the breed, its width of back sufficiently impressed Mr. Lewis Wright to cause him to make emphatic reference to the matter, and in later years to favourably compare it with the more sloping back of the Dorking. In order to remedy a defect in the published standard relative to this very character, and in view of an observed

evenly serrated, erect and close fitting; face red, and wattles and lobes of medium size; neck, gracefully curved and full in hackle; a broad and square breast, carried prominently, and long and deep in bone; shoulders wide, and (as mentioned before) a broad and flat back; skin, clear and of fine texture; wings, close fitting; tail, of moderate size; short, stout thighs; short, strong, clean shanks—widely set; and four straight, well spread toes. The general shape is defined in the standard as "cobby, compact, graceful and erect."

The general characteristics of the hen are similar to those in the cock, as regards head, neck and body; as well as relative to the legs, feet, general shape and carriage. The plumage of both cock and hen is close, and the size and weight of the former is "large—9 lbs. and upwards," and of the latter "large—7 lbs. and upwards."

The three varieties recognised in the standards of the original or "Sussex Poultry Club" are known respectively as the Red, the Light and the Speckled;

to which has been added a so-called "Brown" variety. This latter was refused recognition by the original club, and has, during 1908-9, been fostered by the newly-formed Brown Sussex Club, the variety consisting in effect of Black-Red cocks and Wheaten hens—for some unexplained reason miscalled "Brown." Although the Black-breasted Red cocks and Wheaten hens are by no means uncommon in southern farmyards, the Sussex Club was amply justified in objecting to add to their already sufficiently full classification, although there may be some cause to regret the original standard for the Red variety in this connection. The specimens of this variety which have been exhibited in this early stage of its career show considerable variation, as is always more or less the case in similar circumstances, nevertheless the colours and markings aimed at appear to be, in the cock: reddish brown hackles (neck and saddle) striped with black, dark reddish brown in back and wing bow, the latter barred blue-black, and black breast and tail; and in the hen: similar to cock, as regards head, neck and tail, wings and back mottled dark brown, and breast and under parts light wheaten brown or clay.

To return to the three original varieties, the colours and markings are as follows:

The Red variety, in both sexes, beak, white or horn colour; eye, red or brown; face, comb, wattles and lobes, red; shanks and feet, white; and skin and flesh, white and fine in texture. In the cock, head and neck hackle, glossy brown, striped with black; body, chestnut brown, deeper in colour on saddle and wing bow—glossy; wings, dark brown (rich) and black in flights; wing bow, solid, deep, glossy brown; tail coverts, dark brown, and nearly black at tips; tail, black. In the hen, dark brown head and neck, striped with black; wings, brown, with black in flights; tail, black; rest of plumage, brown.

The Light variety, in both sexes, beak white or horn colour; eye, orange; face, comb, wattles and lobes, red; shanks and feet, white; skin and flesh, white and fine in texture. In the cock, white head; white neck hackle, striped with black; white wings, with black in flights; white tail coverts, slightly tipped with black; tail black; rest of plumage, white. In the hen, white head; white neck hackle, striped with black; white wings, with black in flights; tail, black; remainder, pure white throughout.

The Speckled variety, in both sexes, beak, white or horn colour; eye, orange or brown; face, comb, lobes and wattles, red; shanks and feet, white; skin and flesh, white and fine in texture.

Light Sussex Hen.

In the cock, head and neck hackle, rich reddish brown, striped with black and tipped white; wing bow, red; primaries, white; saddle hackle, as neck hackle; tail, white and black; rest of plumage, white and brown speckled.

In the hen, wing bow, brown, white and black; flights, white; tail, black, white and brown; rest of plumage, brown, white and black speckled.

The value of points are apportioned as follows—perfection scoring 100: Head and comb, 10 points; colour, 20 points;

type, 20 points; condition, 10 points; legs and feet, 15 points; and size, 25 points.

Points to be noted in breeding the Red variety chiefly concern the general difficulty experienced in getting the dark neck hackle with its striping well defined, and the desired chestnut body colour. As a rule some of the otherwise best specimens are disfigured with black specks, and indeed a bird with the required deep chestnut without the undesirable markings does not yet appear to have been produced —certainly not in combination with a sound under colour. It is more than probable that the Black-breasted Red (otherwise "Brown") will be found capable of showing the striping in the hackle, and the absence of black specks, much more easily and quickly than appears possible with the Red standard—which is not to say that the latter is unattainable with time.

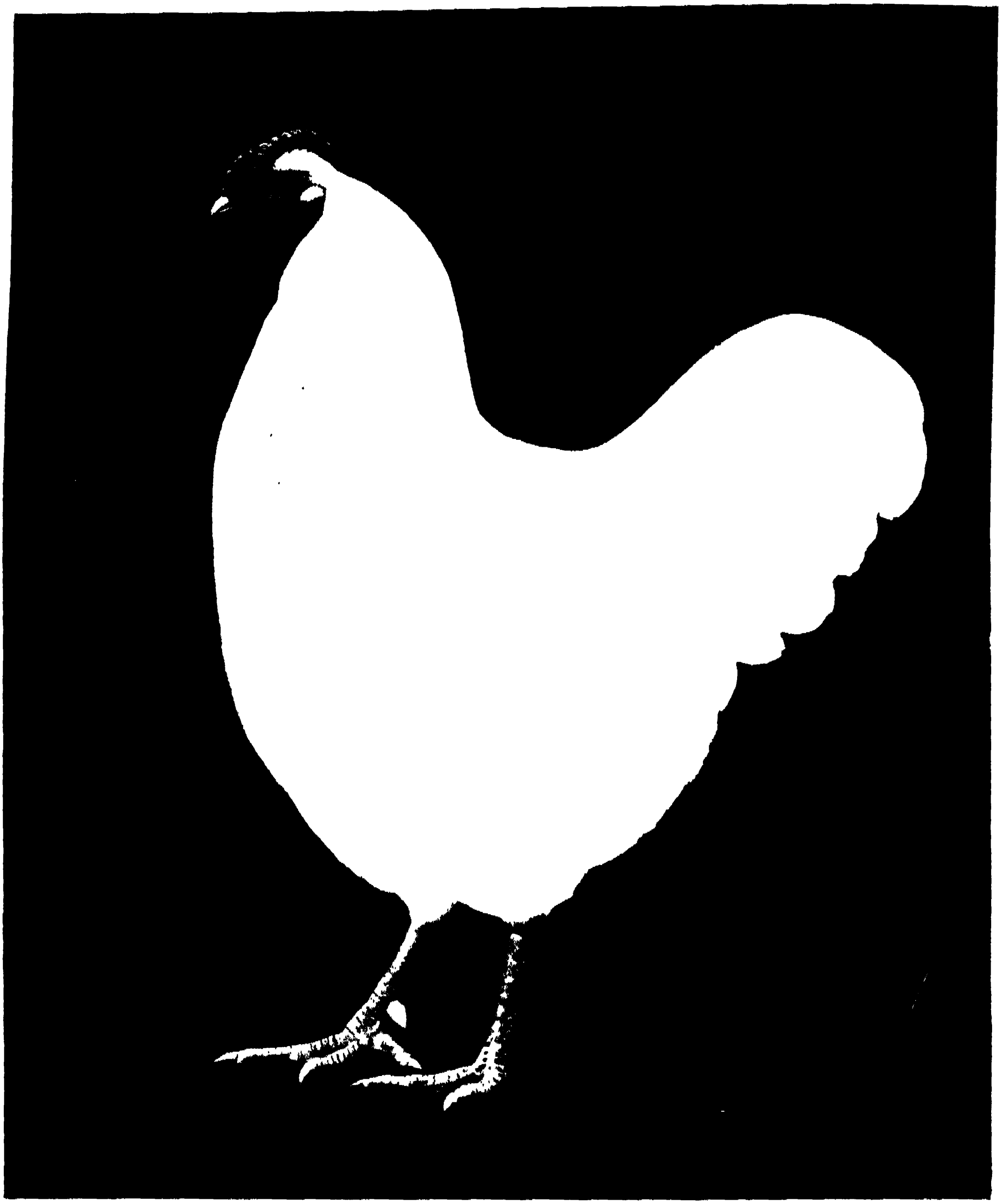
In the Light variety purity of colour is not always achieved, and this defect is more commonly noticed in the cocks than in the hens—ticking is too prevalent, and the hackle markings not always sufficiently defined; and in cases where these externals are more or less fully and easily secured, it is often at some sacrifice of size or type—difficulties that will doubtless be overcome when the variety has been longer bred by skilful breeders, but the purity of the under colour will not be easy of attainment in conjunction with the heavy black markings, nor is there any particular object in such an ambition.

Apart from the question of shape, in which the Speckled has been too frequently allowed to depart from the required flatness of back, this variety has been bred very close to standard requirements, and this is, no doubt, in part accounted for by the fact that it is (according to many competent authorities) the most ancient variety—in the words of Mr. Lewis Wright—"My idea is that the Speckled is the most ancient and fundamental." (*See Plates Nos.* 87 *and* 88.)

SWANS. GENERAL DESCRIPTION. The swans are a numerically small family of Waterfowl, comprising ten known species, remarkable for their great size and their length and slenderness of neck. The bill is rather longer than the head, is of equal breadth throughout, higher than wide at the base, depressed at the point and is furnished with a tubercular protuberance or "berry" at the base, which attains its greatest development during the breeding season, afterwards decreasing in size. The body is rather long and is carried horizontally, legs short, placed slightly behind the centre of the body, the three front toes fully webbed, the hind toe small and free. Plumage, close, full and firm. Wings, long and broad, tail short, composed of from eighteen to twenty-four feathers, rounded at the tip. The female is similar to the male, only slightly smaller. Swans are monogamous and pair for life. After pairing, the birds are a model of devotion to each other. The females do not lay till their second year, some, indeed, not until their third, and commence with three to five eggs, but, when in their prime, the clutch has been known to consist of ten to twelve eggs; it is usually, however, six or seven. Incubation lasts thirty-six to forty-two days, and the young take to the water almost immediately. The Cygnets do not moult until their second year; the nest is usually built close to or upon the water, so arranged as to float in case of inundation, and is composed of a huge mass of sticks, reeds, rushes and coarse grass, and is lined with down from the breasts of the parent birds. Their food consists of various kinds of aquatic vegetables, roots, small fish, eels, fish spawn, snails and various sorts of insects. They are large feeders and will often graze on the land; they are long-lived, fifty years not being at all unusual, and cases are known of these birds reaching the century.

The male is called the "cob," the female the "pen," and the young

PLATE No. 96



White Wyandotte Cock.

(*Bred and exhibited by Mr. A. C. Roberts, Higher Duryard Poultry Farm, Exeter.*)

Winner of 3rd Open Cock Class Club Show Bristol; 1st Exeter Fanciers' Association; 1st Exeter Fat Stock, and 2nd Redhill.

"cygnets." The flesh of the young swan is very tender, and has been compared to goose, though not so rich, and to young heifer beef. The swan is migratory and, in the state of semi-domestication in which these birds are kept in this country, it is necessary to pinion them in order to prevent their escape when the migratory instinct comes upon them. They retain, in this state of semi-freedom, much of their wild instincts, are jealous of interference, and being such powerful birds, it is difficult to manage them like domestic waterfowl. In the breeding season they resent any attempt to approach near their nests. At the same time, given ample grass and water, and left to themselves, they need no attention as to feeding excepting occasionally a little grain, broken biscuit, or bread thrown in the water, and in the case of the cygnets, a little meal thrown to them in the same way, or a little poultry meal when very young, and later a little grain in a trough of water on the bank. It is rather surprising that swans are not kept and bred for profit, as they are so inexpensive to feed, and given proper water conditions, and hatched under geese, domestic cygnet rearing for the market would be profitable, this especially in the case of the Black Swan.

Swans leaving the water at Highgate Ponds.

The most interesting account of successful breeding from a pair of these birds in this country, is given by Mr. Samuel Gurney of Carshalton. "They laid their first egg on January 1st; it was a most severe winter, snow on the ground and intense frost nearly the whole time they were sitting; they hatched their young during the greatest cold of that winter from which they did not suffer, though they had no shelter of any kind and their nest was fully exposed to the east wind. Out of the ninety-three young ones hatched by them in seven years, about half that number have been reared, they have bred sixteen times during the above period and have laid 111 eggs."

——**COMMON OR MUTE SWAN.** The most graceful of the family, was said to have been introduced into England from Cyprus by Richard I., in the twelfth century, and therefore has a good title to be considered and classed as a domestic waterfowl. During the breeding season, these birds are very savage and dangerous to approach as they strike with their wings with great force. Plumage, white; feet and legs, black; bill, orange red; tubercle at the base, black; eye, brown. The adult male weighs about 26 lbs.

—— **POLISH SWAN.** By some considered to be a mere variety, as regards the colour of the young, of the Common or Mute Swan. The supposed distinctions in the adult may merely depend on the age of the bird. The Mute Swan has been known on many occasions to produce broods in which some of the young were abnormally white, but Farrell identified it as a distinct species.

—— **WHOOPER OR WHISTLING SWAN.** The largest of the wild species, is less graceful in its movements than our tame bird, has a most beautiful note, especially when in herds overhead, and does not breed freely in confinement.

—— **TRUMPETER SWAN.** Rather larger than the Common or Mute Swan, weight about 30 lbs. Gets its name from the peculiar cry due to the formation of the wind-pipe, "very long, bent in S shape, turns through hollows in the breast bone." Is kept in captivity and becomes very tame and is a prolific breeder. Herne says, "Flesh excellent eating, resembling young heifer beef, and one of the enormous eggs sufficient meal for a man."

—— **BEWICK'S SWAN.** Like the Whooper in appearance, only slightly smaller. Is a winter visitor to the British Isles, and does not appear to have been kept in captivity.

—— **COSCOROBA SWAN.** (Native of Chili.) Is kept in captivity in the Zoological Gardens. Is very slender and graceful in appearance, about one half the size of the Common or Mute Swan. Plumage, pure white, the primaries touched with black.

—— **BLACK-NECKED SWAN.** Same size as the Black Swan. Is a magnificent-looking bird—the most striking of the Swan tribe. Was bred regularly in the Zoological Gardens since 1857. Hardy home-bred specimens are stated to be worth £20 a pair. The body is pure white; head and neck, glossy black with a white line round the eye; bill, grey, a patch of red in the cheek; feet, dark pink.

—— **BLACK SWAN.** The plumage of this bird as the name implies, is all black. It was imported many years ago from Australia. Is not so large as the Common or Mute Swan, but has a similar graceful carriage. Dr. Bennet mentions that the Black Swan was some time since so abundant in Australia, that he has seen a drove of them being driven like a flock of geese up one of the principal streets of Sydney. This bird is very prolific in confinement, producing two or three broods in the twelve months. The young are very hardy.

—— **AMERICAN WILD SWAN.** Entirely white, has been kept in captivity in the Zoological Gardens.

—— **PÈRE DAVID'S SWAN.** Not known in captivity, nor as yet satisfactorily identified.

SWEDISH BLUES (*see* "Ducks").

SWOLLEN WATTLES. Poultry suffer sometimes from swelling about the sides of the face and the wattles become painful and enlarged. In some cases this may be attributed to injury due to fighting or to accident; in others it is one of the effects of roup or other disease. The best course to adopt in a case of this sort is to foment the wattles with warm decoction of poppyheads. This will reduce any swelling and will allay any pain the bird may feel. It should be pointed out that some breeds of poultry are much more prone to this trouble than others—for instance, Spanish and the Mediterranean breeds (Leghorns, Minorcas, Anconas, etc.). These birds need constant attention to their combs and wattles, especially during the winter season, when they are apt to suffer considerably from the effects of frost. A very excellent plan, and one adopted by many experienced exhibitors, is to oil the comb and wattles with sweet oil, or grease them with a little vaseline, either of which will tend to keep them free from frostbite. In the case of male birds intended for the breeding pen, it is often an advantage to " dub " both comb and wattles, and thus do away at once with any possibility of trouble of this kind.

SYMMETRY. Beauty of proportion and shape.

SYNCOPE (*see* " Apoplexy ").

TABLE POULTRY. An extremely important branch of industrial poultry-keeping is the production of table chickens, and it is a branch, moreover, that is rapidly gaining in popularity as the demand for lighter articles of food increases. The heavy dishes that appealed so strongly to our forefathers are rarely appreciated now-a-days, owing no doubt to the fact that, living as we do under such artificial surroundings, we require lighter yet equally nourishing foods. The production of table chickens while more or less common in all parts of the country, is chiefly concentrated in the counties of Surrey, Sussex and parts of Kent. This does not mean that the actual hatching and rearing of the chickens are carried out in these parts, but the final fattening process, described elsewhere, is concentrated in the South-east corner of England. Few people, except those intimately connected with the industry, have any idea of the vast proportions of the trade that is carried on in the production and fattening of table chickens. While it is true that the monetary value of the business does not amount to anything like that of the trade in eggs, it is still a very large and profitable one. The term fattening is not a good one, and is liable to convey a wrong meaning. The aim in fattening is not to add fat, as the word would imply, but rather flesh. A much better term is that used in the States—finishing, or in France, ripening, and these convey the correct meaning. In some cases, when unsuitable foods or methods are employed, a layer of oily fat is added on to the carcase, but this is most objectionable, and cannot be too strongly condemned. Much of the fat disappears in the cooking, and thus an apparently large bird becomes a thin, emaciated specimen. Not only is the aim of fattening to add flesh of a fine quality, but also to soften the flesh already there. Thus it will be seen the terms finishing and ripening are infinitely more applicable.

However suitable may be the methods of fattening employed, or however experienced one may be in the art of feeding, unless the birds themselves are favourable the best results cannot be achieved. Large supplies of Irish birds arrive in this country in order to be finished off by the fatteners in Surrey and Sussex, but many of these are such unsuitable birds that they can never command the best prices. It is essential that the birds shall possess flesh of a good colour, for certain kinds of flesh are at a discount in this country, only being able to command a poor price. There is a strong prejudice against yellow-fleshed birds, and while it is largely a question of fancy, it must be considered when supplying the trade. Poulterers state that they are unable to find a ready sale for birds of yellow colour ; if they can avoid buying birds of this description they do so ; if they have to purchase them it is at a greatly reduced figure. In the States it is exactly the opposite, as there yellow flesh finds the readier sale, while white is at a discount. A good table chicken, therefore, must have white flesh, and, perferably, though not necessarily, white legs and feet. Quickness of growth is another consideration, especially when prices are on the decline, as every day may make a difference in the amount procurable, and a week, perhaps, cause the price to vary as much as a shilling one way or the other. Forcing food assists development to some extent, but the most important factor in this respect is the selection of quickly maturing parents. A large breast development is an important consideration, as the best quality meat is to be found on this part. Some birds carry far too much meat proportionately on the legs, which must always count against them. There is another point determining the suitability of a bird for table purposes, which moreover, is very frequently overlooked, namely, the readiness with which it lends itself to fattening. Some breeds add flesh very quickly indeed, while others, no matter how much time or attention is bestowed upon them, never look really well. This point often cannot be decided upon until the birds are actually being prepared for market, but as soon as it is discovered the culprit should be removed, for it is no use wasting time and money in trying to fatten it. One might almost as well try and fatten a greyhound. The hatching and rearing of table chickens are mostly carried out by farmers, small occupiers of land and cottagers who are enabled to largely augment their incomes by the production of suitable table chickens. There are many cases in which for years past the whole rent of the farm, of the holding or the cottage, has been paid merely by the chickens sold to the fatteners. Collectors, or as they are locally termed, "higglers," traverse the country daily, buying up all the suitable chickens, and reselling them to the fatteners at a profit of a penny or three-halfpence per bird. The chickens are bought immediately they are large enough to be fattened. The price paid for the birds varies, of course, according to the time of the year, and depends largely upon the supply and demand. Early in the season, however, during March, April, and the first fortnight of May, there is no difficulty in procuring from 3/- to 3/6 for birds about twelve weeks old, provided they are well developed, have straight breast bones, and flesh and legs of the right colour.

The prices for table chickens naturally vary very considerably with the time of year, as the following table, which has been supplied by a leading London Salesman, shows :—

January	3/6
February	3/6
March	3/9
April	5/-
May	4/9
June	3/9
July	2/9
August	2/6
September	2/9
October	2/6
November	2/9
December..............	3/-

These figures show that during the first six months of the year the average was 4/0½ per bird ; during the second half year it was 2/8½ per bird ; and during the whole twelve months an average of 3/4½. These figures, however, are for all sorts and conditions of birds, but for really well fattened specimens the following may be taken as the average during 1904 :—

January	4/-
February	4/-
March	4/9
April	5/6
May	5/9
June	5/-
July	4/9
August	3/3
September	3/6
October	3/3
November	3/3
December..............	4/-

From these figures we find that during the first six months of the year the average was 4/10 per bird; during the second six months just over 3/8; or an average for the whole year of very nearly 4/3 per bird. (For detailed values, *see* "Marketing").

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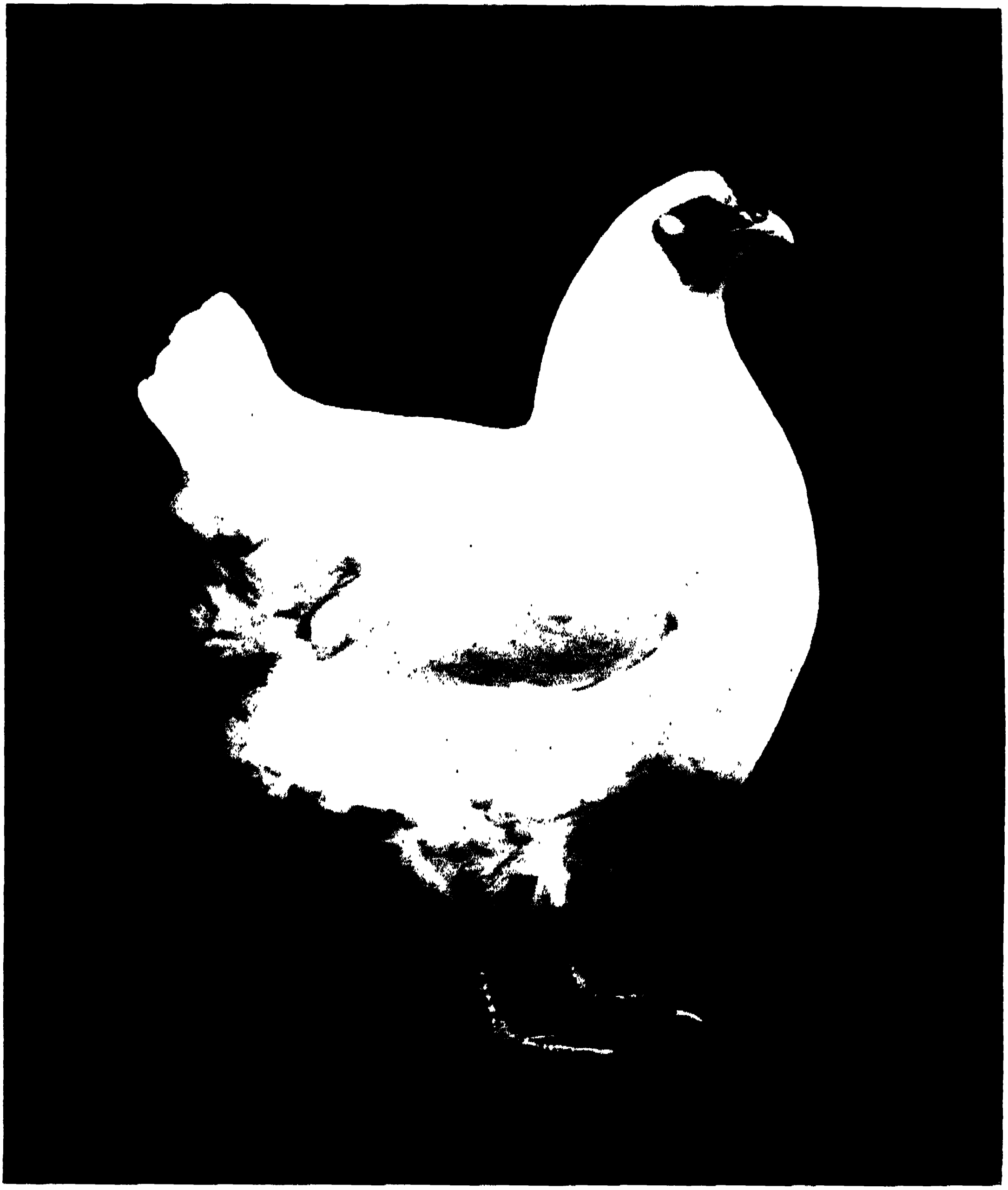


White Wyandotte Hen.

(The property of Mr. William H. Cook, Model Poultry Farm, St. Paul's Cray, Kent.)

Winner of 1st Challenge Cup, best Hen in Show, Poultry Club Breed Cup and Medal at Halstead; 1st Redhill; 1st St. Albans; Reserve International; 1st Folkestone; 1st Oxted and 1st Sittingbourne.

The table breed, *par excellence*, is the Dorking, no variety being able to equal it so far as quality, colour, and flavour of flesh are concerned. The body is large and deep, and when looked at sideways appears a perfect parallelogram; the breast is long and deep, and it carries a large amount of flesh upon it. The legs are short, pure white, and the fifth toe appears on each foot. The Dorking is slightly delicate, and does not thrive well in very cold exposed situations, or upon very heavy soils. There are five varieties, the Dark, Silver Grey, White, Cuckoo and Red. Of these the first two are the most suitable. The Old English Game is a breed possessing an enormous breast development, owing to the fact that for so many generations it has been employed for fighting purposes. The meat upon the breast is composed of the muscles that work the wings, and in order for a cock to be able to better his opponent in the ring, it was necessary for him to have large powerful wings, thus developing the breast accordingly. Old English Games are compact in body and closely feathered, looking smaller than they really are. The legs are clean and long, and for table purposes the white-legged ones are preferred. The Sussex is bred very extensively in the south-east of England, but when Sussex fowls are spoken of on the London market, it does not necessarily refer to any variety, but to the system by which the birds have been prepared. Sussex fowls are large in body, with white legs and light bone. There are three varieties, the Red, Light and Speckled. The Faverolles is a breed of French origin, and is largely bred in that country. Of the table breeds it is the best layer. The Indian Game is of little use in a pure state, as its flesh is such a brilliant yellow, but it is of the utmost value for crossing purposes. It has an enormous breast development. The Buff Orpington is a valuable breed for producing table chickens, but it cannot be called by any stretch of the imagination a first-class table bird. It is, however, very extensively used, probably owing to the fact that of the general-purpose fowls the Orpington is the only one with white legs. The pullets of this variety fatten well, but not so the cockerels, the breast bones always remaining prominent, and preventing the bird from looking fat or well finished. The Buff Orpington is a large framed bird, is hardy, and for general purposes cannot be excelled. The best of the French table breeds are the La Bresse, the La Fleche, and the Crev Cœur.

There are several reasons why crossing may be recommended for producing table chickens, and under certain conditions a cross may answer better than a pure breed. One of the disadvantages of present day poultry keeping is the liability of forcing on the birds, thus reducing the stamina and vigour, and for this reason crossing is sometimes to be strongly recommended. Cross-bred birds are hardier and stronger, and consequently easier to rear than pure breeds, provided the the parents of such a cross are both themselves pure bred. A pure-bred cock, for example, mated with a lot of mongrel hens, will improve the offspring, but if such a cock as this is himself a cross, then the results will be far from satisfactory. In selecting birds for producing table chickens, several points must be considered. A small comb is regarded in France as essential in a good table fowl, while feathered legs are generally avoided. The bodies should be thick set, having a great depth from the breast to the back, and the greater part of the flesh should be on the breast rather than upon the legs. A great variety of crosses are suitable for table purposes, but there are a few generally accepted in this country as being the best. These are:—

Indian Game—Dorking.
Indian Game—Houdan
Indian Game—Buff Orpington.
Faverolles—Buff Orpington.
Old English Game—Dorking.
Old English Game—Houdan.

Indian Game—Faverolles.
Buff Orpington—Faverolles.

Of these, the first mentioned is generally acknowledged to be the best, and a couple exhibited at the Smithfield Fat Poultry Show, in London, a year or two ago—the ones that procured the cup for the finest birds in the Show—weighed 22 lbs. 10 oz. the couple

TAIL-COVERTS. The curved feathers below the sickle-feathers, growing at the *root of the tail.*

TAIL-FEATHERS. The *stiff quill feathers growing between the pairs of sickles and tail-coverts.*

TEAL (*see* "Waterfowl, ornamental").

TESTING EGGS (*see* "Eggs, testing").

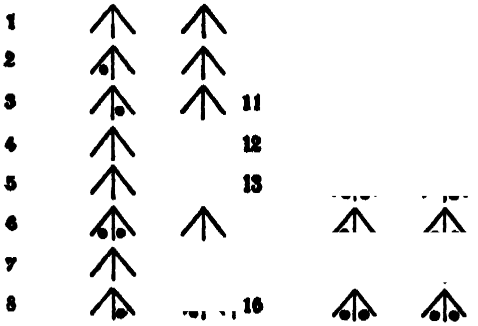
THATCHED ROOF (*see* "Housing").

THERMOMETERS (*see* "Incubators").

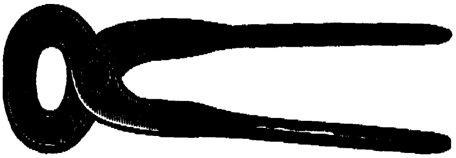
THERMOSTAT. A form of regulator (*see* "Incubators").

THIGHS. The part above the shank, known as the drumstick in a cooked fowl.

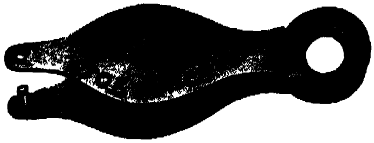
TOE PUNCHES. Every up-to-date poultry-keeper realizes the necessity of properly marking his fowls, whether he breeds for the showroom or for market. The fancier must have some method of marking individual birds so that they can be identified for scoring, keeping track of pedigree, etc. The marketer must also have some accurate method of keeping count on the age of his fowls, and thereby guard against birds being kept until they are past the profit producing stage and become profit consumers. Nearly every poultry-keeper will want to know at some time just what birds were hatched from a certain pen or flock, or at a particular time. A popular system of marking chicks in order to keep a record of hatches is to punch the web in the chick's foot. The operation is entirely painless to the



Possible Variations in Marking.



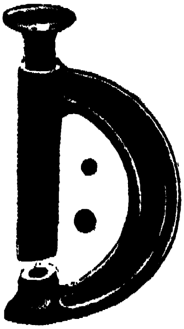
Chicken Toe Punch. (*Allen Poultry Co., Ltd.*)



Chicken Toe Punch. (*Tamlin.*)

Chicken Toe Punch as used in U.S.A.

chick, and an entire hatch can be toe-marked in a few moments. From the diagram illustrated herewith it will be seen that sixteen different breeds or matings can be toe-marked without duplication. For instance, the poultry-keeper can mark all the chicks in one hatch as shown in figure 2, and then the next hatch will be marked as in figure 3. By following this plan, chicks from special matings or pens, even though hatched with chicks from other matings, can be marked for positive identification at any time. The instrument for marking in the manner indicated is made by the Cyphers Co. (*See* also "Leg Bands.").



Chicken Punch as used in U.S.A.

TOP-KNOT (*see* "Crest").

TOULOUSE (*see* "Geese").

TRANSYLVANIAN NAKED NECK. This is a Hungarian variety, and is very rare, only being found in the Transylvanian districts. In appearance it resembles the Indian Game and Plymouth Rock, having the plumage of the latter. The Transylvanian Naked Neck has been classed among the "general purpose" breeds, it being a good all-round variety. The birds are rather long in the leg, and carry a large quantity of flesh on the breast, have white skin, white feet and legs, and a small, neat comb, and make excellent table birds. Up to the present time very little has been heard of this breed, but there is a possibility that it will become better known in a few years. It is a particularly hardy species, and does well on a heavy or medium soil.

Transylvanian Naked Neck.

TRAP NESTS (*see* "Nests").

TRIMMING. A fraudulent means of preparing birds for exhibition.

TRIO. A pen of one cock or cockerel, and two hens or pullets.

TRUSSING (*see* "Marketing").

TUBERCULOSIS. Avian tuberculosis is known by a variety of names, but the most common one applied to the disease in poultry is roup, and "a cold." These so-called colds are contagious, and for a cold to be contagious there must be a contagium. In this instance the contagium is the germ of tubercular disease, a micro-organism named after its discoverer Koch's bacillus, or the *bacillus tuberculosis*. It has become an accepted theory that it is the same germ that is the cause of tuberculosis in mankind, and all other animals. Yet, at one time scientists held the view that there were a variety of germs causing tubercular disease in different creatures, and they based their opinions upon very untenable foundations, such as the size of the germs, mode of growth, etc., which depend upon localized conditions. The disease usually localizes itself in special organs in different creatures. In small birds, such as canaries, it attacks the spleen, and secondarily the liver. In poultry it generally attacks the liver, the mesenteric glands, glands in the neck, and underneath the eyes.

A Victim to Tuberculosis.

It is the generally accepted idea that all forms of tubercular disease are due to the bacillus of tuberculosis, but it may be held that the germ is merely an exciting cause of a deposit of tuberculous matter, owing to setting up local inflammation, and that any substance setting up local inflammation in a creature whose blood is loaded with amyloid matter, will cause tubercles to be formed. In the so-called colds of poultry, swellings take place in some cases underneath the eyes as the result of inflammation and the infiltration of tuberculous matter into glands and tissues. At first the matter is soft. but later on, if not dispersed, becomes a hard cheesy mass. It is the same when deposited in the cells in the lungs, or in any gland or other tissue. The predisposing causes given in most writings on the disease, are chiefly those which have a depressing influence, or an exhausting one, such as an insanitary condition, due chiefly to defective ventilation. A damp soil is certainly a depressing influence, and an exhausting one when combined with a chilling damp atmosphere. In a vast number of cases a predisposition is inherited, and is due to malnutrition of the parent on the female side. In malnutrition we have in all cases the chief predisposing cause of creatures becoming tuberculous, therefore, in suitable nutrition lies the direct means of prevention, and also the chief means of effecting a cure in creatures attacked by the disease, and more especially when cure is assisted by an abundant supply of the purest air attainable. A warm, and more especially, a warm and a moist atmosphere is a predisposing cause of tubercular disease, and favours its development. The higher temperature of a fowl when broody assists the development of the disease, and sitting breeds of fowls are more subject to be attacked by tubercular disease than are the non-sitting breeds. However, the chief reason for this is their greater liability to store up fatty matter in their blood, and elsewhere. While poultry are very liable to become the subjects of tubercular disease, it is to be observed that the same class of birds living in a natural state, and with wholly natural environments, are exempt. This makes it evident that a predisposition to become the subjects of the disease has been created in domestic poultry, and this is more especially the case during recent years, owing to their being fed with a diet containing an excessive quantity of starchy matter. It is certainly not due to the housing of them, because in this respect giant strides have been

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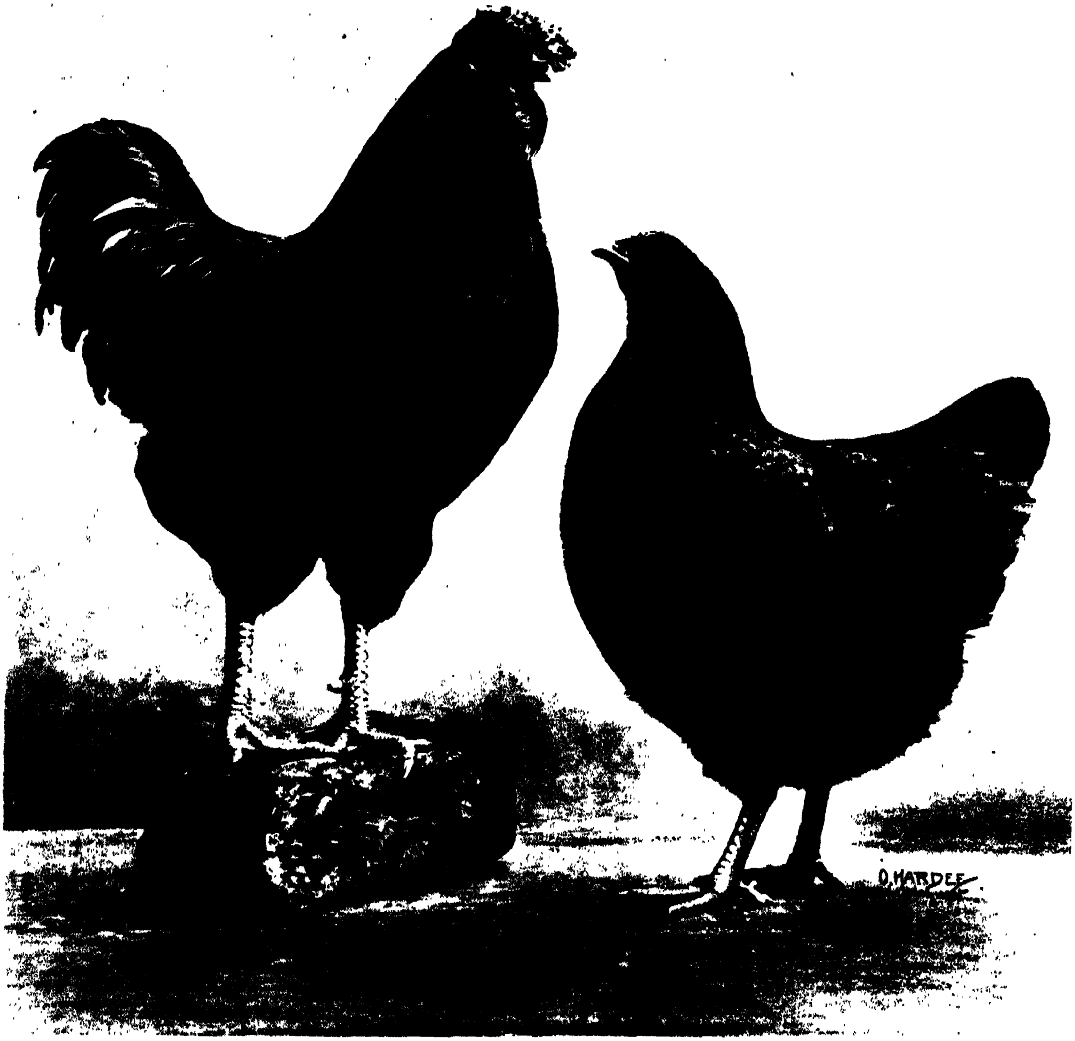


Black Wyandottes.

(Bred and Exhibited by Mr. Richard Cape, Gatewood House, Exbury, near Southampton.)

Cockerel—Winner of 1st and Medal Dairy; 1st and Special best Black Wyandotte Cockerel Crystal Palace (International); 1st and Special best Black Wyandotte Birmingham; 1st and Special Cambridge; 1st and Special Ulverston; 1st and Special Winslow; 1st and Special Cleator Moor, etc.

Hen—Winner of 1st and Special best Black Wyandotte hen Crystal Palace (International); 1st Ulverston; 1st Bristol, etc.

(These birds were subsequently purchased by Mr. Harold Porritt, Netherwood, Grange-over-Sands.)

made in the improvement of their habitations as regards their sanitary condition. In past times they were not housed at all, or in some close stuffy hole of a building which was, as a rule, very seldom cleared of the excrement of the fowls, and even under such conditions tuberculosis was rarely met with in poultry, but now many thousands of fowls die annually of chronic tuberculosis, and, including chickens, a vast number die of the disease in early stages. In past times domestic poultry had to forage for a considerable portion of their diet, but now they are almost exclusively fed with a diet containing a very large proportion of starchy matter. It has been said that this is the chief predisposing cause of poultry becoming the subjects of tubercular disease, yet it was also said that the principal predisposing cause is malnutrition. Let us see wherein lies the agreement between these, apparently, conflicting statements. It will be granted that a sufficiency of flesh-forming elements are necessary for the perfect nutrition of any creature, and when poultry are fed with a diet containing more than a very limited quantity of starchy matter, it is not possible for them to devour as much food as will allow of their having a sufficiency of flesh-forming elements. In order to decide how poultry should be fed so as to have a sufficiency of flesh-forming elements in their diet, it is necessary to know what are the chief constituents of all natural diets, that is, diets naturally provided, and their proportions to the whole bulk of the diet. The only natural diets are yolk of egg, milk, flesh and fish. A chicken is formed from the white of an egg, and the yolk of it forms its first diet to last it for the first twenty-four hours after it has emerged from its shell. Were it not for this natural provision, most birds would perish soon after emerging from their shells, and more especially those which have to forage with their parent in search of food. This natural provision allows of the birds becoming dry before being exposed to the open air, and for them to gather strength from it. In yolk of egg, thirty-one per cent. of the *solids* are flesh-forming elements, on which strength and vigour depend. In milk, the first diet of mammals, twenty-eight per cent. of the solids are flesh-forming elements. In flesh, the sole diet of carnivorous creatures, there is an average of more than fifty per cent. of flesh-forming elements in the solids, and in fish, the sole diet of a vast number of creatures, there is as great a percentage of flesh-forming elements in the solids, and in no natural diet is there ever fifty per cent. of solids. In order that this matter of the proportion of flesh-forming elements in the solids may be clearly understood, it should be pointed out that about seventy-five per cent. of the lean of beef is water, leaving about twenty-five per cent. of solids, of which about twenty per cent. are flesh-forming. The lowest percentage of flesh-forming elements in the solids of any natural diet being about twenty-eight per cent., it is only reasonable to arrive at the conclusion that, at least, nearly twenty-eight per cent. of flesh-forming elements is required in the diet of any creature in order for it to keep in a fairly nourished condition, and in less than fifty per cent. of solids. In the cereals, namely wheat, barley, dari, millet, barley, oats, maize, etc., there is not an average of half that percentage, and in about eighty-six per cent. of solids, the place of the necessary flesh-forming elements is taken by excess of starchy matter. In the cereals there is an average of more than sixty per cent. of starchy matter, and it cannot form one atom of muscular tissue on which strength and vigour depend; it can only, like fat, be burnt in the body of any creature to supply heat, but with vastly important differences. When fat is burnt anywhere there is no residue, but when starchy matter is burnt in the fiercest fire there is a residue of ashes—earthy salts.

These in excess are a predisposing cause of poultry becoming the subjects of tubercular, and other diseases owing to their over-taxing the kidneys, whose function it is to rid the blood of waste matter. When there is an excess of starchy matter in the diet of any creature its blood becomes loaded with fatty-amyloid matter, which forms the chief bulk of a mass of tuberculous deposits. In all natural diets fat is provided to burn up and supply animal heat, and one atom of pure fat is equal to more than two of starchy matter in supplying animal heat. When there is an excess of starchy matter in the diet of poultry, and no irritant to cause tubercles to be formed, the cheesy fatty matter becomes generally diffused through the kidneys, spleen, liver (and other soft parts), there being a predisposition in these organs to become the subjects of fatty degeneration, and in the spleen and liver for a deposit of tuberculous matter to take place in creatures whose blood becomes loaded with fatty-amyloid matter.

Besides the disease being caused, that is, tubercles formed by the action of bacilli, feeding cayenne pepper to poultry will cause tubercles to be formed in the liver, and masses of cheesy matter to become deposited in the vermiform appendages of the bowel, owing to the irritant action of the cayenne pepper. In the liver miliary tubercles are formed, that is, an immense number of cheesy masses about the size of millet seed.

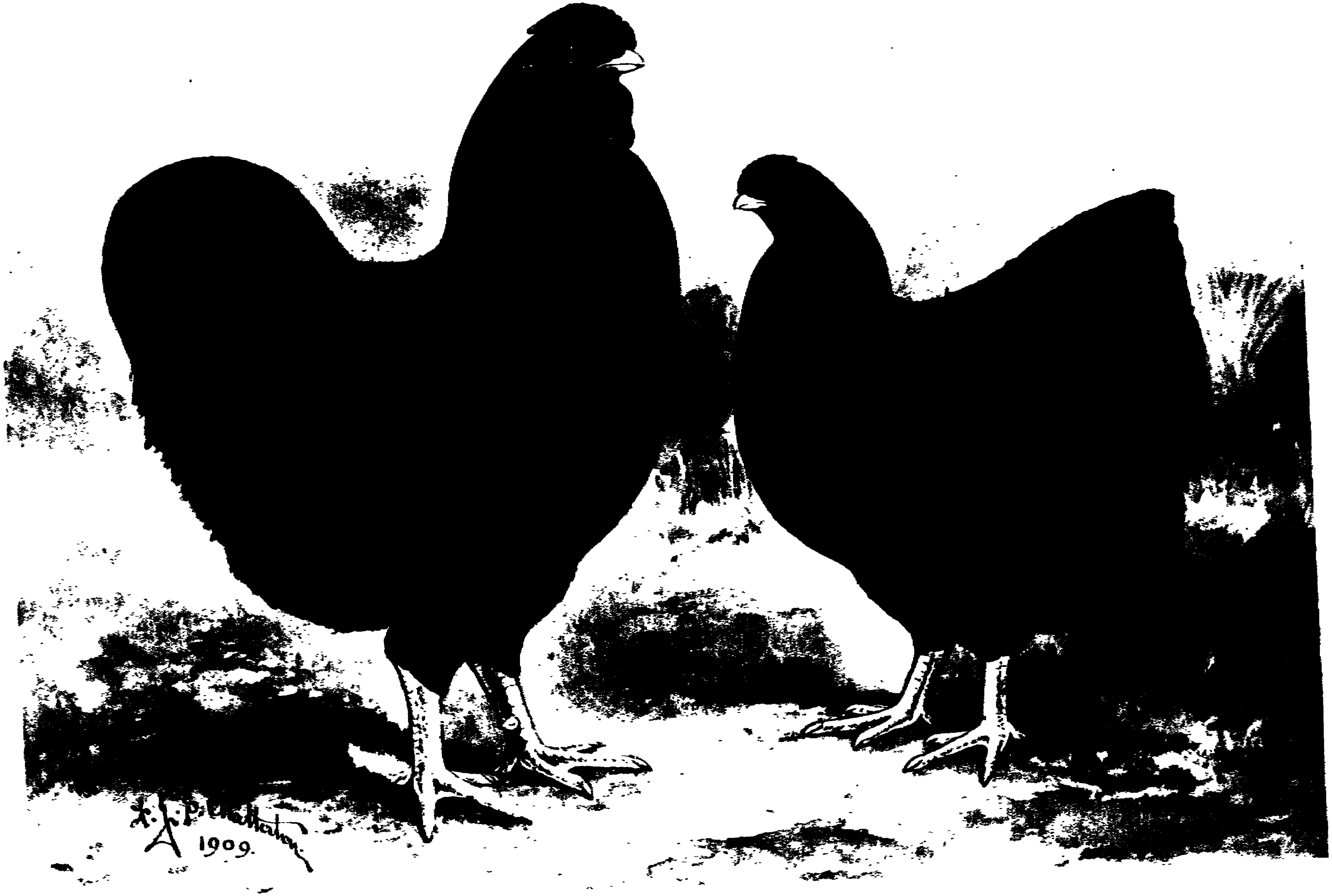
The most common means of infection is by ingestion, that is, the germs of the disease being swallowed, usually with food, or water polluted by a fowl suffering from the disease. A fowl may be infected by inoculation through wounds, or abrasions caused by fighting. It is a very common circumstance for fowls to have a very bad attack of tubercular disease after fighting, though neither of those fighting may have exhibited any symptom of disease previously to the fight having taken place, yet, the disease must have been latent in one of the fowls, and those in which development of the disease took place must have been predisposed to the development. At one time the opinion was held that the disease could be inherited, but the general opinion now is that it cannot. If the germs of the disease cannot be inherited, a predisposition to be attacked by them certainly can. This predisposition is the result of the birds producing the eggs, from which the chickens predisposed to be attacked were hatched, having been fed with a diet containing an excess of starchy matter. This is made very evident by all chickens attacked being more or less the subjects of fatty-amyloid diseases, at least, this invariably has been the case in the many thousands of post-mortem examinations carried out by the writer.

The most important means of prevention and treatment is a suitable diet, that is, a diet containing but little, if any, starchy matter. A pure and cool atmosphere is a great aid in curative treatment. As regards medicines, it is necessary for them to contain antidotes to the action of the germs of tubercular disease, or substances which will cause the tissues to be unsuitable for their development. In skilful hands medicines are of immense value, but only as antidotes, or mechanical agents. *Nature* is the great healing power needing only the removal of offending matter or an antidote to its power for doing harm, to allow of her doing the healing. Any diseased condition is an unnatural one.

TUFTED DUCK (*see* "Waterfowl, ornamental").

TUMOURS (INCLUDING WING-DISEASE). The commonest form in which tumours appear is the form known as wing-disease, which attacks both poultry and pigeons, and shows itself in the appearance of a tumour underneath or above the wing joint. It may often be brought on by a bird striking itself

PLATE No. 99



Black Wyandottes.

(Bred and exhibited by the Rev. J. W. A. Mackenzie, Whitwick Vicarage, near Leicester.)

Cockerel—1st and Special Carmarthen; 1st and Special Cirencester; 2nd Crystal Palace (International); 2nd Birmingham; 2nd Club Show, Le

Hen—1st Crystal Palace (International); 2nd Club Show, Leeds; 1st Carmarthen; 1st Cirencester; 1st and Silver Medal Sandy; 1st and Special Eastbourne.

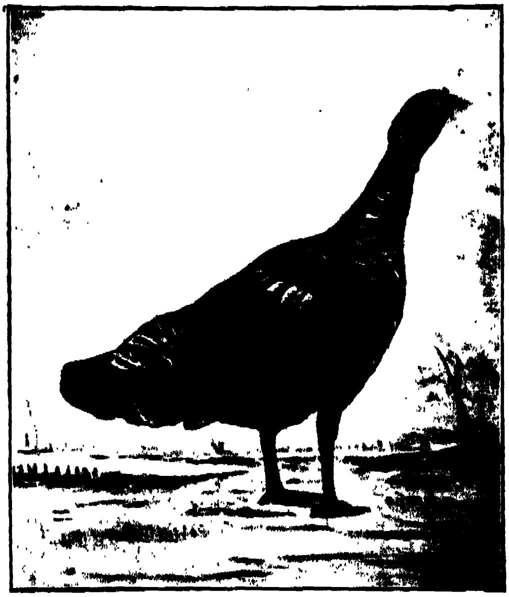
against netting, against a perch or any other hard substance, and it is very difficult to get rid of, because it seems to settle in the joint, and that joint at once becomes a centre for the collection of all the scrofulous matter there is in the bird's system. In many cases ointment of iodide of potassium is a good thing to apply to these tumours, especially if very hard. This ointment should be rubbed on two or three times a day, and the bird should have liver medicine at the same time to clear the blood. If necessary, a linseed poultice may be applied to the lump by way of softening it, and inducing it, if possible, to discharge. When the discharge has ceased the place should be well syringed with carbolic lotion, and may then be bandaged up after being dressed with carbolized vaseline, or, better still, with iodoform on cotton wool or lint.

TURKEYS. DOMESTIC VARIETIES. Concerning the wild turkey, and questions relative to the origin of the varieties known in the state of domestication, the reader is referred to the section under the general heading of "Origin." There are several varieties kept in domestication, and it may probably be news to many English breeders to know that the American standard of perfection provides for six distinct varieties; in addition to which there are in that country, as well as in England and elsewhere, some others that are almost unknown beyond the narrow limits of the districts in which they are bred. For the present purpose it will be sufficient for all practical purposes to deal with the Bronze, and briefly refer to the other American standard varieties; as well as our Old English (and turkeys have been bred in this country since early in the sixteenth century) varieties—the Norfolk Black and the Cambridge Bronze, with the additional inclusion of the White Holland.

—— **AMERICAN BRONZE.** Visitors to English poultry shows will be more familiar with the appearance of this variety than any other, although the White Holland is increasing in favour; and the same relative positions are found when we approach the varieties from the point of view of the breeder for market—with some intermediate places occupied by the Old English varieties in some turkey-breeding localities. The American Bronze is the nearest of any variety in appearance to the wild turkey, and in the hands of skilful breeders is capable of attaining to extraordinary weight and size; and under suitable treatment is very hardy, and the young grow rapidly and are easy to breed up to an approximation to standard requirements. The point that is of primary importance for the market producer is the comparative ease with which weight may be attained by the use of this variety, either in its pure state or when used in cross-breeding; although it is noteworthy in this connection that the demand for excessive weight is undergoing some modification, and is already much more limited than was once the case. In the great majority of cases Bronze turkeys bred to standard weights would be unsuitable for the bulk of the requirements, and this is one reason why many breeders prefer to use this variety as a factor in cross-breeding for market purposes.

In shape the typical Bronze is well balanced, rounded and massive, with a full breast. Both breadth and length exist in the head, with a curved bill of medium length; the neck is long and curved, and the throat heavily carunculated. The curve of the back is gradual from neck to tail, and the length of back is medium, with a corresponding width. The breast is characterized by breadth and depth, and should be full and rounded, while there should be no crookedness or defect in the contour of the keel. The wings are carried neatly folded, and the spread of the tail is even. The thighs are moderately long and stout in build, the shanks strong and of moderate length, and the toes strong and straight with a good spread. Allowing for the differences consequent upon sex, the shape and appearance of both male and female is in general practically similar.

The head colouring includes red and bluish-white, the eyes are hazel, and the bill horn-colour; the neck is bronze of different shades, with a light bronze from the neck to the middle of the back, the end of each feather being black.



American Bronze Turkey.

From the middle of the back to the tail-coverts, the feathers are black with bronze edges. The breast feathers are bronze with a narrow edging of black, the body colour black with a bronze shading, less vivid than that of the breast. The colour of the fluff is black, with black and bronze bands and white edging. The black wing-bows have a greenish-bronze lustre, the primaries are barred black and white, the secondaries black or brown barred crossed with white or grey, and merging into a bronze-brown, and the coverts are bronze with a black band at the end. The tail is pencilled with light brown bands, terminating in black with a white edge. The colouring of the thighs corresponds with that of the breast. The shanks of young birds are very dark, but are frequently almost flesh coloured in the adults; and the toes are practically the same, although, not so light as the shanks in the adults. In the hens the colouring is less brilliant, although otherwise very similar to that of the cock; with the exception that upon the back and breast there is an outside edging of grey or dull white.

Distinctness of colour and marking is very desirable, but there are many shades of bronze and the markings exhibit considerable variation in domestication; the wings and tail present the greatest difficulties in breeding the Bronze to the required standard, and very few approximate to prefection in these particulars. (*See Plates Nos.* 89 *and* 90.)

- --- **OTHER AMERICAN VARIETIES.** The Narragansett is of most importance, next to the Bronze, as a producer's bird in the land of its origin, where it is used very freely by some commercial breeders; many of whom find it more useful for the production necessary to meet a demand for medium size. The variety appears to have originated in the State of Rhode Island, and to have taken its name from an Indian tribe that once inhabited the locality. In appearance it is barred black and white, and is said to breed true to colour; and for marketable purposes to attain a suitable maturity at from five to six months of age. The hens are relatively prolific, and the eggs usually show a high percentage of fertility, provided, of course, that the management is correct.

Other American varieties include a Black, which although otherwise a good plump marketable bird is by many objected to on account of the too conspicuous colour of the pin feathers. The plumage of this variety is black throughout. The birds are hardy, and quick growers.

The Buff and the Slate varieties are less widely bred, and the white, which is standardized in America, is referred to in a subsequent paragraph.

—— **ENGLISH VARIETIES.** Considering the length of time that the turkey has been bred in this country, certainly from the time of Henry VIII., it is not very surprising to find that two more or less distinct varieties have been evolved; nor, on the other hand, is it very wonderful to find that as ease of communication and facilities for transport have increased, the American Bronze has been much more freely introduced into our farmyards. The old English local varieties have been commonly known as the Norfolk Black and the Cambridge Bronze, and although these local descriptions have (as a result of breeding for a particular purpose for successive and numerous generations), acquired some uniformity of type, there has been some more or less considerable variation as regards colour and markings; which is, of course, inevitable where birds are selected and bred primarily for the single purpose of utility, and without reference to a standard. As a matter of fact, the Norfolk Blacks are standardized, although practically disregarded for the purpose for which standards are drawn up. To refer to such birds as the Cambridge Bronze as a variety is perhaps to stretch the true significance of the term beyond its legitimate limits, and the description appears to be more correctly applicable as a trade term, although a general question may be raised regarding the origin of varieties in domestication, which would be far too large and complicated a matter for present consideration.

The Norfolk Black as bred in the district of its apparent origin, should be (as its name implies), black in plumage; but the feathers are liable to exhibit spots and tips of white, a defect that is also found in breeding the American Black variety. Its economic characteristics include relatively short legs, small bones, medium size; combined with a capacity to make flesh, and that of a fine quality and white colour.

The Cambridge Bronze is commonly described as possessing a characteristically bronze-grey plumage, but there does not appear to have been much uniformity in this respect at any period, the description having been extended to birds of varied plumage, which, however, approximated to a greater uniformity of type. In comparison with the Norfolk Black, the Cambridge Bronze may best be described as longer in the leg and of a generally larger build; although falling short of the American Bronze as regards size and weight, but there is very little evidence of any continued maintenance of either of the English "varieties" at the present time.

—— **WHITE HOLLAND.** This extremely beautiful variety has made considerable advance in popular favour during recent years, both as an ornamental bird and for table purposes. The deeply-rooted prejudice, based upon the erroneous supposition that delicateness of constitution is of necessity synonymous with whiteness of plumage, has very largely given way before the evidence of experience; and not only is this variety much more frequently bred on account of the attractive appearance exhibited upon grass-land, and the contrast afforded by the red and blue hues of head and neck, and the male's black tuft, against the spotless white of the body plumage, but also for the delicacy of flavour when used for table. Characteristics of this variety are fineness of bone, and relative smallness of size; but a very useful cross for market purposes may be produced by mating a bronze stag of medium size with typical white hens. The progeny of such a cross are not very attractive with their speckled plumage, but they are usually hardy, easy to rear, and attain a good medium size, which is that preferred by the bulk of the modern demand. Nevertheless, with careful mating, white stags may be produced of about 26 lbs. and hens of about 16 lbs.; weights that are sometimes exceeded, but not to the advantage of the variety.

The characteristics of the White Holland, which is also called the White Austrian, and has in any case been evolved from "sports," are a pure snow-white plumage throughout, with the jet black tuft or beard upon the breast; the head and wattles are a bright red; and the shanks flesh-coloured, or of a pinkish shade. The typical shape is full, round, and blocky; the neck of medium length, the tail moderately long, the legs stoutish, and the feet inclined to be large in proportion. In disposition this variety is gentle, in constitution is hardy, and in production is prolific; the young are comparatively easy to rear, may be quickly matured, and produce flesh of excellent quality and texture. (*See Plates Nos.* 91 *and* 92.)

——**GENERAL MANAGEMENT.** The turkey is not only the largest of the wholly or partially domesticated gallinaceous birds, but it ranks next to the common domestic fowl, in point of view of usefulness and economic importance, as regards the genus to which it belongs; nevertheless, it cannot be said to be fully domesticated, retaining (in common with the guinea-fowl and the pea-fowl), more or less wild instincts and habits, such as have long since been more fully eradicated in the case of the common domestic fowl. This fact of the survival in some measure of its wild instincts, is one that must be remembered in its management in a state of captivity; and it is probable that as its size and habits make it unsuitable for any but a comparatively wide range, its more complete domestication will only be very gradually achieved, and will perhaps never be so thorough as that of the barndoor fowl. This is not to say that the turkey is not amenable to management, but to emphasize the fact that the methods employed must make suitable allowance for the special requirements of the bird. One very serious result of a general failure to understand the peculiar needs of turkeys may be seen in their very common delicateness when bred under some conditions of domestication, a difficulty which has prevented many poultrymen from having anything to do with their breeding, it being a common opinion that these birds are inevitably delicate, whereas they are naturally very strong and hardy, and the cause of degeneracy is generally traceable to wrong methods of breeding and rearing and a failure to understand the special needs of semi-domestication.

In any case, as the turkey is a great forager, and wanders far afield in search of natural insect and vegetable food, acquiring and maintaining health by the constant exercise, it is more essentially a farmer's fowl than any other; not excepting the goose, which may be profitably kept by commoners and others, who in similar situations would be obliged to buy more food for turkeys than would be consistent with economical production. Upon a suitable and sufficient farm range of arable, pasture and woodland, turkeys will not only make natural and otherwise wasted food contribute largely to their support, through a considerable portion of the year (and the turkey is a long time growing into a marketable size), but will also, in the act of eating, destroy much life that would, by its continued existence, be harmful to the crops. The benefit is therefore doubled, to the farmers. Moreover, and entirely apart from considerations of cost of production, the size and stamina of the young and growing stock depend so largely upon the freedom of a suitable range, that their breeding should never be attempted where this condition is not assured.

The character of the range as regards soil must also be taken into consideration, and in this connection the weather influence has an important bearing upon the subject; and it is a matter of experience that in some seasons turkeys may be successfully reared in some situations, where under other weather conditions they had better be left alone altogether. In view of the changeable climatic conditions of these Islands, turkeys will as a general rule do better on light soils; yet in a very dry year, when green food is scarce, they may often be better reared on a heavy soil, which would ordinarily be impossible. A rich, but not heavy, soil will generally be capable of good average results in turkey breeding and rearing.

——**HOUSING ARRANGEMENTS.** Although as has been suggested, the delicateness of the turkey is primarily due to errors of management, involving in some measure defective housing accommodation, it does not appear that it is altogether economically desirable to entirely dispense with the provision of some sort of adequate shelter. The essence of the successful management of these birds in a state of domestication is to find the happy mean best suited to their requirements, and if they are allowed full freedom of choice in the matter of roosting, one extreme is abandoned for another; and although they will benefit in one direction, such a course will not be altogether conducive to such profitable production as should result from domestication, and without which the breeder's labour is in vain. However, much we may recognise the benefits of liberty, a sufficient control is essential to profit.

A roost-house for turkeys is after all a very simple construction, and answers the purpose better if it is made with materials handy to the farmer, than if built of bricks or stone or any ordinary building material. The floor is the first consideration, and may be of any hard material with a smooth surface suitable for daily cleaning; its actual composition is a matter of small importance so long as it meets the requirement named, because it must be remembered that this bird seldom alights upon the floor, and as a rule remains upon the perch until the doors are opened in the morning. The two sides and back may consist of boards nailed to a rough, but stout, framework, or tightly packed kiln faggots may be used for the purpose and prove very efficient. Thatch makes absolutely the best roof, and no other need be considered where straw is available. The doors should be made to cover the whole of the front, and to open outwards simultaneously; and when this is done the birds will fly straight out on to the grass from the perches, so that on this account alone a roomy house and wide doors are essential. The doors should be made of wooden frames, wholly or partially (the upper half at least) covered with wire-netting. The perches, which should all be rather high above the floor, should be fixed from side to side, each being about two feet farther from the front than the one immediately before it, and two feet higher up, forming, as it were, steps from the

Arrangement of Perches for Turkeys on an Irish Farm.

front to the back. The house should face south, and be built in a situation providing some shelter (of trees or otherwise), from northerly and easterly winds. Such sheds are not only suitable for the accommodation of the adult stock, but the young birds should be housed in the same manner from the time they "shoot the red"—in other words, develop the characteristic appendages of head and neck.

——**FEEDING AND BREEDING.** Relative to feeding in general, it is necessary to bear in mind that the turkey is possessed of a continual appetite, which is one reason why it thrives better upon a large range where it can constantly pick up food in small quantities, than in situations where large meals are necessary to satisfy hunger — but injurious to the digestive system. Although the turkey is such a large bird, its internal economy is not suited to deal with food in considerable bulk, and the young are particularly liable to many disorders as a consequence of immoderate feeding. The subject of feeding the young birds will be found under the heading of "Rearing," and in this connection all that remains to be said in this place is relative to the feeding of the breeding stock.

Overfeeding is as great an error in the treatment of the adults as it is in the case of the young, and although some stock is rather neglected during the unproductive periods, there is on the other hand a tendency in other cases to feed too heavily during the winter. Some amount of surplus fat serves a useful purpose in cold weather, but considerable care is necessary to avoid an unsuitable condition for laying when the productive season approaches. If at that time the birds are inclined to be overfat, activity must be induced by a slight reduction in the hand feeding and the consequent encouragement to forage over a wider area; a small morning and evening feed will, in such circumstances, be ample, and sometimes a rather fuller evening meal and the stoppage of breakfast is necessary to secure the desired condition. The character of the food must, however, be as carefully considered as the quantity, and, according to the conditions, may consist entirely of oats; oats, meat, and vegetables; or in some cases may be extended to include the usual meals used in soft food mixtures; barley-meal, ground oats, sharps, biscuit-meal and greaves; and for corn feeding, oats, barley and wheat; while swedes, kohl-rabi, etc., may supply the deficiencies of growing vegetation. The quantities, and the varieties used, must however, be entirely judged in accordance with the limitations of the range.

As regards the breeding stock the first essential is to avoid any approach to inbreeding, which is such a common cause of the deterioration of turkeys in domestication; but on the other hand some discrimination is necessary in the selection of suitable birds, as regards both sexes, and any sort of haphazard mating is prejudicial, or may be so, as far as the suitability of the progeny for the purpose is concerned. Vigour and constitutional soundness must be looked for as primary essentials, and the birds should possess good frames that have gradually reached full maturity on a large and suitable range; but they must not be too large, any very excessive size being unsuitable for breeding purposes. Shape, proportion and balance must be duly taken into account, and the colour and marking of the plumage should not be overlooked, even if exhibitional breeding is not the aim; the general characteristics of a breed should be as far as possible combined, although externals must not be preserved at the expense of health and general fitness to perpetuate the strain or family. Young stock should be selected from the total flock some time in October, and run freely until a subsequent and final selection is made; but they must not be mated for breeding until they are sufficiently mature to produce a vigorous off-spring. It is probable that as a rule the best progeny are produced by birds of between two and three years old, the off-spring of such mating being strong in constitution and growing into a good average marketable size. A hen will usually be a profitable egg producer until the completion of the fourth year, and in some strains for a longer time. An old stag is always to be preferred to a young one, provided the weight of full maturity is not excessive. In mating, the proportion of hens to a cock may be from six to eight, and in some cases a larger number is possible, a matter that depends upon the system of managing the breeding stock.

The spring is the natural laying season, and domestication has resulted in very little change in this particular. The average date of the commencement of production is some time in March, and the general aim of the turkey breeder is to get as many eggs as possible undergoing incubation for hatching in April, the best month for the purpose; the remainder of the birds being produced during May and June. The hens must be induced, as far as possible, to lay in nests suitably provided near faggot stacks or other places likely to interest the birds, and a sharp look out must be kept at the beginning of the laying period, as these birds have a natural tendency to steal away and lay in distant woods or hedgerows.

The incubating period is twenty-eight days, and the eggs may be hatched in incubators, under common domestic hens, or under turkey hens. The most common method is to set the first batches under domestic hens (covering from eight to ten eggs each), and to let the turkey hens sit upon the final batch of from fifteen to sixteen eggs to each hen. The nests for sitting are best constructed upon the ground, in a dry place, with a shallow lining of some soft nesting material. The sitting hens, of either description, should be treated in the usual manner during the incubating period; and, at the conclusion, left to bring out the chicks undisturbed. For the treatment of the chicks during the rearing period, their feeding, cooping, etc., see the section on " Rearing."

—— **FATTENING AND MARKETING.** The general subject of " Fattening " is dealt with under that heading, but it may be noted that in the case of turkeys the whole process of rearing must consist of a progressive treatment leading up to the final finishing period; and that the marketing results depend upon the complete treatment in both branches of feeding. This is, of course, in a measure true of all poultry production, but it is more necessary to insist upon it in the present case, in view of the fact that young turkeys are too often more or less neglected during the period between the " shooting of the red " and the beginning of the fattening process.

Method of Killing Turkey by Dislocation.

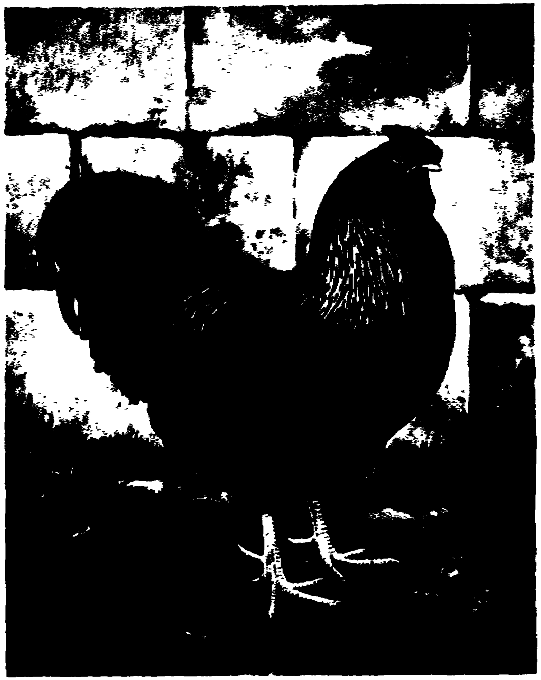
Killing, as in the case of other descriptions of poultry, is best effected by dislocation of the neck, which is not a difficult operation when once properly acquired; and although it requires some strength and firmness of wrist, is in the end more a matter of skill. An alternative method is by stunning, followed by the rapid thrust of a knife into the roof of the mouth; but there is the disadvantage of the soiling of the feathers by the blood, which in the other mode of killing drains into the cavity caused by the dislocation. Plucking must be carefully performed, so much depending upon appearance, which is so quickly spoilt by any rough handling, and especially by the tearing or discolouring of the skin. Tying and shaping varies somewhat in different districts, and the best rule is to conform to local custom in such details of preparation for market. When the carcase is fully prepared it should be placed upon its back on a shelf, in a cool situation and preferably where there is a free passage of air; and left there until all the animal heat has escaped, and it becomes set and cold.

Stunning a Turkey.

The details of grading and packing require more than the usual consideration, because such matters have rather more influence upon the returns than is commonly supposed. Birds of different sizes and quality should not be despatched in the same hamper, for fear the best are valued at the price of the worst, which is quite likely to happen. Crates or hampers of moderate size are more convenient than very large ones, and the birds should be packed with the breast down in straw, with butter paper next the carcases; packing them sufficiently tightly to prevent any displacement during the journey, but not tight enough to mark with the straw or to spoil the set shape. (*See* "Marketing.")

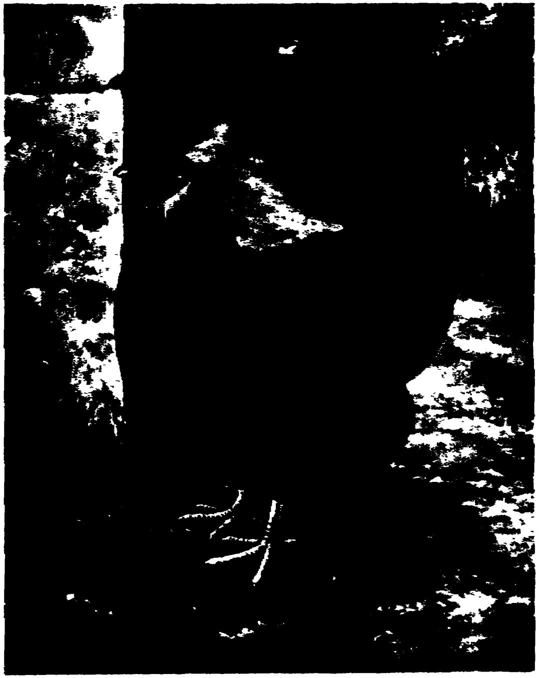
Illustration of Method of Killing a Turkey by Piercing the Brain.

PLATE No. 100



Partridge Wyandotte Cock "Victor."

1st Crystal Palace, 1905, 1906 and 1907; and Club Show, 1906 and 1907 and Winner of more 1st Prizes than any other Partridge Wyandotte



Partridge Wyandotte Hen "Peach."

1st Crystal Palace, 1905; Club Show, 1905, 1906; and Winner of every Trophy eligible for the Club Show, 1905 & 1906 1st Otley, Birkenhead and Bath and Western Counties, 1908.

(The Property of Mr Hubert Wright, Mayfield, Keighley, Yorks.)

TYPE. That which combines best the characteristics of a group of fowls.

ULCERATIONS AND SORES. Ulcerations and sores, such as are seen on poultry, are really due to scrofula, which often takes the form of a running sore or an eruption on the skin. Constant knocking or rubbing against a perch will bring a sore on the breast-bone if the bird happens to be at all disposed to that sort of thing, and this is what often happens with highly-bred poultry. There are numerous ways, however, in which sore places can be started, and perhaps one of the commonest is by poultry fighting with each other. The best way to treat a sore or scrofulous eruption—which, if not dealt with speedily and effectively, will develop into an open wound—is to wash it from time to time with a weak solution of carbolic acid, or with a solution of coal-tar or permanganate of potash, using warm water for the purpose; and after this bathing with a lotion, applying to the place a small quantity of carbolized vaseline or boracic acid ointment, or any other ointment that is of an antiseptic nature. If the wound or sore be an old one, and discharges badly, the best thing to use is iodoform ointment, that being a very powerful antiseptic. At the same time the bird should have some internal medicine—a compound rhubarb pill or a dose of Epsom salts now and again. Birds suffering from such troubles as these will never made good stock birds, but often fanciers resort to in-breeding for the purpose of "fixing" certain points, and Nature in consequence takes her revenge.

UNDER-COLOUR. The colour of the downy part at the root of every feather.

USEFUL CROSSES (*see* "Breeding, cross").

UTILITY POULTRY CLUB, THE. It is only of comparatively recent date that poultry keeping in the United Kingdom received such united support as a society or club alone can give. It is true that in 1877 "The Poultry Club" was formed, but its objects were entirely to further the interests of fancy poultry-keepers, much being done to promote showing. It was not until twenty years later that the Utility Poultry Club was founded. At that time (1897) some attention was being given in the poultry papers to the raising of poultry and eggs, but not much, and there were very few people selling stock and eggs for utility purposes. In its appeal to the public for support, the club set forth the following, among other objects which it intended to promote:—(1) To encourage the breeding of pure or cross-bred birds with due regard to utility, by breeding only from selected layers. (2) To give prizes at shows for table poultry and eggs; to establish laying competitions between pens of birds under proper management. (3) To obtain the best advice for members on all matters relating to the selection, breeding and keeping of poultry; to facilitate change of blood from good laying strains.

The club was founded by an enthusiastic amateur, Mr. H. Holmes-Tarn, and prominently associated with him was Mr. J. W. A. Pedley, the Rev. T. S. Raffles and Mr. Randolph Meech, who at that time was lecturing on poultry keeping. The members numbered about thirty, and how popular the club became the following figures show:—1898, 140 members; 1900, 330; 1903, 750; 1905, 1250; and 1906, 1350. The present membership of nearly 1400 includes most of the people who take a prominent part, either in keeping utility poultry or in instructing others how to do so.

Having formed the club, the first thing to be done to encourage the breeding of utility characteristics in poultry was to facilitate the acquisition of stock bred on these lines. At that time it was a common practice, as, indeed, it is now, to sell mismarked "fancy" cockerels to farmers and others to improve their stock, and an effort was made to impress upon the utility poultry-keeper the great importance of obtaining birds of good laying strain when importing new blood into his yard. A register of breeds kept by members was started. This, more than anything else, facilitated the interchange of birds and eggs among members, and enabled a more systematic method of breeding to be followed, for the register gave particulars of strain in addition to other information, such as the method in which the birds were kept, the situation of the runs, height above sea level, soil, etc., all of which are important factors in the production of table poultry and eggs. The register has rapidly increased in popularity, and, at the present time, contains entries in respect to over 1000 pens of mated-up poultry. To facilitate its use, it is compiled afresh every year, and is printed and bound up with the "Year Book," which every member receives upon payment of the current subscription.

But, having started the register, it was obviously necessary to test the value of the strains, and with this object in view the club began the series of laying competitions for which it has become famous. Apart from the great value of such competitions as a test of what the birds entered are capable of in the production of eggs, there has been the additional advantage of attracting attention to the great possibilities of the laying hen. At the time of their introduction by the club in 1898, the competitions created considerable interest and some amusement, and they were soon copied by Denmark, Russia, Australia, South Africa and Canada. In Australia they have been carried on to an extent far in excess of anything attempted in the country of their origin; indeed, the Colonial Government so far recognised their importance as to make very liberal grants towards the expenses, which are naturally very heavy. The club has always incurred considerable loss in these competitions, which has been met from the general funds of the club. The Board of Agriculture and Fisheries, however, made a grant of £25 towards the expenses of the first Twelve Months' Competition, ending in September, 1908. It soon became apparant that with the great ignorance of modern methods of poultry keeping it was necessary to provide facilities for obtaining expert advice. An advisory board accordingly was formed, and consisting of some eighteen well-known experts on poultry-keeping, who give advice to members gratuitously. Among those who render such valuable assistance are the Lecturers on Poultry Keeping for some fourteen County Councils, and who, from their frequent contact with poultry-keepers are particularly able to deal with new difficulties that so often arise.

In addition to advice members can also have post-mortem examinations of their poultry made without charge, while a fee of sixpence will enable a member to have a microscopic examination of any foodstuffs and a report thereon. An employment bureau has been the means of bringing together a large number of masters and servants, and a register is also kept of poultry-keepers who are prepared to take pupils. Other minor advantages of membership comprise:—the purchase of working plans of poultry appliances at a nominal price; acceptance of all kinds of insurances, *e.g.*: against loss by fire, theft, burglary, storms, and even foxes, though the premiums are rather too high to make the scheme popular; special discounts offered by a number of firms dealing in appliances and foodstuffs for poultry.

Various useful books and pamphlets, and the very valuable leaflets of the Board of Agriculture and Fisheries are sent to members. The "Year Book," originated in 1900, has been issued every year since with the Register of Breeds. It contains rules, full parti-

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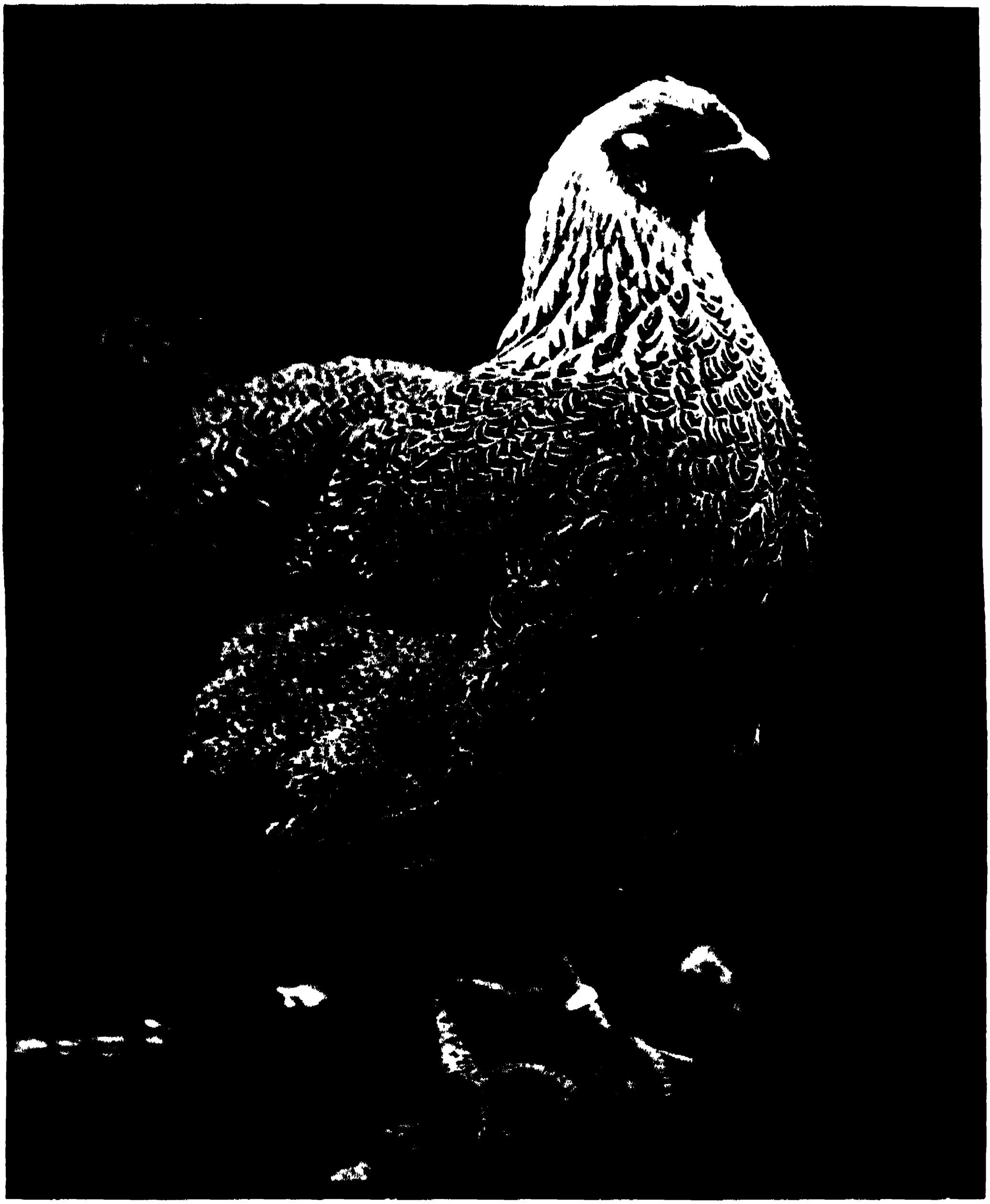

Silver Pencilled Wyandotte Hen.

(*Bred and exhibited by Mr. David Foulis, Cairnie, Aston, Hertfordshire.*)

Winner of 1st and Gold Medal United Wyandotte Club Show; 1st Dairy Show; 1st Tunbridge Wells; 1st Hayward's Heath, etc.

culars of the privileges of members, of the laying competitions and summary of the winning pens, a complete list of members with addresses, a *resumé* of the past year's work, monthly notes for poultry-keepers, balance sheets, various useful tables and other information and a number of advertisements. The Register of Breeds included with it contains particulars of over 1,000 pens of utility poultry mated up, from which eggs may be obtained, and has gone a long way in solving the difficulty of getting new blood. And the value of this medium is greatly increased by the fact that all those who enter on the Register are members, and as such are liable to exposure in the event of unfair dealing.

These and other advantages are for members, but not all the work of the club is in this direction. Ever since the club was started grants have been made every year to local horticultural and agricultural shows to be given as special prizes for table poultry and eggs. The low prize money offered at these shows is not sufficient encouragement to promote the best exhibits being shown, and the grants of the club have consequently assisted towards raising the standard. Nor has the club failed to take a prominent part in those matters that vitally concerned the utility poultry-keeper. Early in its career an effort was made to obtain an amendment in the Agricultural Holdings Bill 1900, so that a tenant might receive compensation on quitting his holding for any improvement arising from the feeding of poultry on his land. No recorded evidence was available at the time to show how greatly land could be improved by the feeding of poultry thereon, and the club issued forms and collected some interesting figures. Considering how little attention was then given to the poultry industry, it was not surprising that the effort was unsuccessful. An active part was also taken in the proposal to mark foreign eggs, while so recent a subject as poultry-keeping and the preservation of foxes has engaged the attention of the club. Two large utility poultry shows have been held under the direct management of the club, at the Crystal Palace in 1904, and at the Plymouth Exhibition in 1905. At both these shows numerous classes were provided for appliances, as well as table poultry and eggs. Competition was open to all and no exhibitor was obliged to be a trade exhibitor or rent a stand at the exhibition. The exhibits, moreover, were shown together according to their respective classes, thus making the exhibition much more instructive. Free lectures and demonstrations were provided throughout the exhibition.

The greater amount of the work of the club is done gratuitously, and in addition to the secretary, who has a small salary, the club has the help of five hon. assistant secretaries, in addition to an hon. treasurer and hon. auditor. At all times the club has maintained financial stability in spite of the very small subscription, which is a minimum one of 2/6d., though as this hardly covers the cost to the club of a member, the larger subscription of 5/-, or more, is asked for from all those who can afford to pay it. By this method the club is available for the poorest, while its work is carried on through the support given by the more prosperous members. With the great increase in the number of utility poultry-keepers and the better recognition of the value of this branch of agriculture, the club has a good work before it, and it behoves everybody who is interested in a subject of such national importance to see that the club's efforts, which have been so successful in the past, are maintained and increased in the future. The publishing office of the club is 68b, Lincoln's Inn Fields, London, W.C.

UTILITY POULTRY-KEEPING. Poultry-keepers are divided into two quite distinct classes, namely utilitarians and fanciers, and for many years past a continuous and persistent rivalry has existed between them. Sometimes this rivalry has been friendly, but we fear that more frequently it has been acrimonious, for it must be admitted that at first sight the two have little in common. Those who belong to the fancy group devote all their skill and experience and exert all their energies, to the improvement of show points—that is, to the *outward characteristics*, such as feathers, *shape, comb, wattles, crests, etc.*, while *they have been altogether indifferent to the laying* or *table* properties. The utility poultry-keeper on the other hand, is very largely indifferent to the outward features, save where they indicate an economic quality ; while he has devoted his time and energy to the improvement of the laying or marketing characteristics. The struggle, then, is between exhibition points and utility characteristics ; and which is the more important depends upon what purpose the birds are intended for. We are bound to confess, however, that, so far as profit is concerned, we think the utilitarian has much the better chance, as those who make a living from their exhibition fowls are indeed few and far between, while there are thousands of practical poultry-keepers, scattered far and wide about the country, who, if they are not making a luxurious income, are at all events, making a profit. It is often argued that fanciers must make by far the greater amount of profit, as they sometimes secure such wonderful prices for their fowls, but we do not think we are in anyway exaggerating when we state that the great majority of fanciers regard their poultry as an expensive hobby, and realize that it is almost inevitable for the balance to be on the wrong side at the end of the financial year. Even if a bird is successful in the show-pen—say, it takes first prize, and is sold for £10, it does not always represent a profit ; there are innumerable expenses, such as carriage, entry fees, hampers, etc., while it must also be borne in mind that perhaps a hundred birds have been reared to produce the one prize winner. Then, too, think of the many birds that are sent to shows that do not even procure a "Highly Commended" or a "Commended," all of which must be put against the one successful entry. The plan that some poultry-keepers adopt, and, to our thinking, perhaps the best, is to try and combine not exactly show points, but absolutely true-to-type specimens that are at the same time good laying or table fowls. That this is possible has been proved over and over again, and there is no doubt that when conducted along practical lines it is an extremely profitable combination. There is always a very good demand at high prices for both cockerels and pullets that are true to their breed and that possess good economic qualities. The aim of the utility poultry-keeper is to keep the best birds that he can secure, best so far as his special requirements are concerned. He wants birds possessing valuable economic qualities, either prolific laying or good edible properties. Until within comparatively recent years there was considerable difficulty in procuring really good utility stock, but all this has been altered nowadays, and there is no difficulty at all in obtaining birds at a reasonable figure.

A question that is being asked every day by many of those who are seriously thinking of taking up poultry-keeping as a business, is whether this branch of agriculture really pays, and whether they will be safe if they give up their present work in order to devote themselves entirely to poultry-keeping. The answer depends upon many circumstances, without a full knowledge of which a definite answer is impossible. It may be stated, however, for the guidance and encouragement of those who are seeking such advice that there are scores of men and women at the present moment who are making reasonable profits from poultry-keeping. Scores of cases could be cited to prove this assertion, if they were necessary, but anyone who has troubled to enquire at all fully into the subject will agree with this statement. It is true, however, that in nearly all cases in which success has been achieved, there have been some special features assisting in no small degree to this end ; either the man was particularly skilful or experienced ; or he possessed some remarkably prolific hens, the progeny of which he was able to sell at a good figure ; or he was able to cater for a particular market ; or some other fact was present assisting very materially towards his success. Generally speaking, it is unwise for a man or woman to throw up permanent work and go in for poultry, unless they have first convinced themselves that they possess the necessary characteristics essential to make the venture a success, and can combine with it some other agnaillinal production. Moreover, one must have sufficient capital to start properly. For one thing, the profits during the first year, if there are any, which is extremely doubtful, will be small. So many enterprises are crippled at the outset owing to the fact that the owner sinks his all in the venture and tries to live out of his business from the very first. This amounts to almost the same thing as living upon one's capital, because no profit is to be expected during the first season, and it is extremely unlikely there will be any the second. It is really the same as buying the good-will of a business, and it should be regarded in that light. Many failures are due to the fact that perhaps all one's capital has been exhausted in starting the farm, with the result that one has to keep withdrawing money, really capital, during the first year or two, which naturally cripples the business very severely, frequently preventing the enterprise continuing, just perhaps as the corner is being turned. We have known several cases in which, could the owner have raised another hundred pounds, he might have been able to build up an excellent business, which would probably have supported him during the remainder of his life. In commencing utility poultry-keeping it is a great mistake to begin operations on a large scale, as this so often leads to failure. By far the best plan is to begin in quite a small way, gradually increasing as one gains experience, and learns which branch is best suited to the locality, which varieties thrive best, and which class of work is most congenial, because uncongenial work encourages failure.

There is no more important branch of utility poultry-keeping than that of egg production. That there is an opening for the growth of this branch must be evident to anyone when they realize fully the vast sums of money that are being poured every year into the pockets of our foreign rivals. So far as one can determine we import as many eggs as we produce, and while this state of affairs exists there is little fear of over-production. Particularly is the trade a profitable one when the bulk of the eggs are produced during the winter months when they are naturally expensive, the supply being so extremely limited. There is more competition in this branch than in any other, but at the same time so far as really new-laid eggs are concerned we have little to fear ; it is in the second-grade produce that the greatest competition exists. Many poultry-keepers appear to altogether fail to realize the importance of marketing eggs when they are absolutely fresh, and it is largely owing to this fact that foreigners have secured so firm a hold on our markets. The preparation of table chickens is another very important branch of industrial poultry-keeping, and one that could be very greatly extended. Many of the fatteners think nothing of turning out a hundred dozen birds per week during the five or six busy months of the year, while the output seldom falls below fifty or sixty dozen per week. For this reason it is often thought that unless operations are conducted on an extensive scale success is impossible. This, however, by no means follows. It is quite possible to make a very good profit by fattening on quite a small scale, turning out a dozen or even half-a dozen per week. Farmers would find it pay them well to devote more attention to this branch instead of sending their birds to market in a lean and scraggy condition. The trade in "broilers" or "petits poussins," is one that is growing in this country, although the bulk of the class of produce is imported from the continent of Europe. It is a branch that requires much skill and experience to make successful, but when success is achieved the profits are fair. When one is living in close proximity (within 15 or 20 miles) of a fattening establishment, there is a very lucrative branch that can be taken up, namely rearing chickens for disposal to the fatteners, who are generally willing to give very high prices for suitable birds. As soon as they are large enough, that is when they are about fourteen or sixteen weeks old, and when they are in lean running condition, they realize excellent prices, particularly during the early months of the year, when as a rule, the supply falls so far short of the demand. There are many cases where cottagers and small farmers are making considerably more than their rent from the chickens they rear for the fatteners. One of the reasons why pure-bred stock are to be recommended rather than cross-breds or mongrels is because the progeny of the former are always able to command such a much better price. For ordinary laying pullets from first-class utility parents six shillings or seven and sixpence is quite an ordinary figure, while prices run up as high as a guinea or guinea and a half. For cross-bred birds, on the contrary, half-a-crown and occasionally three shillings is as high as it is possible to get. Under favourable conditions, and if the variety selected is a popular one, this is a branch that pays extremely well. The sale of newly-hatched chickens is a branch that has received a good deal of support during the last few years, and there are evidences to show that it is likely to grow to much greater proportions. There are ad tages connected with this trade to both producer and buyer. There are many so situated that they cannot devote space or time to rearing, while there are others who are differently placed, and for some reason or another cannot undertake the hatching. Until the advent of this branch a very large trade was carried on every spring in the sale of eggs for hatching purposes, and still a large number of eggs change hands during the early months of the year. Prices vary, of course, very considerably, according to the value of the parent stock. For eggs from ordinary laying or table-birds, the price is anywhere between two shillings and sixpence and five shillings per dozen; while for eggs from valuable pedigree birds as much as a guinea or thirty shillings per dozen may be charged. It cannot be said, however, that this is altogether a satisfactory branch, because so many things may happen to the eggs from the time they are laid until they are placed under the hen or in the incubator. One is only able to buy the possibility of chickens, however much one may pay, whereas, when purchasing day or week-old chickens one is certainly obtaining something definite in exchange for one's money. Other important branches that may be mentioned are duck, goose and turkey raising, each of which possesses certain advantages. These branches are dealt with under their separate headings, and we need do no more than mention them.

In determining which branch of poultry-keeping should be taken up there are several very important factors that must be considered. The amount of land at one's disposal is extremely important; so are the requirements of the markets in one's particular vicinity. Another consideration that must play an important part in determining which branch is to be taken up, is the soil, climate and location. If, for instance, one is living in a damp or cold exposed situation, where there is little

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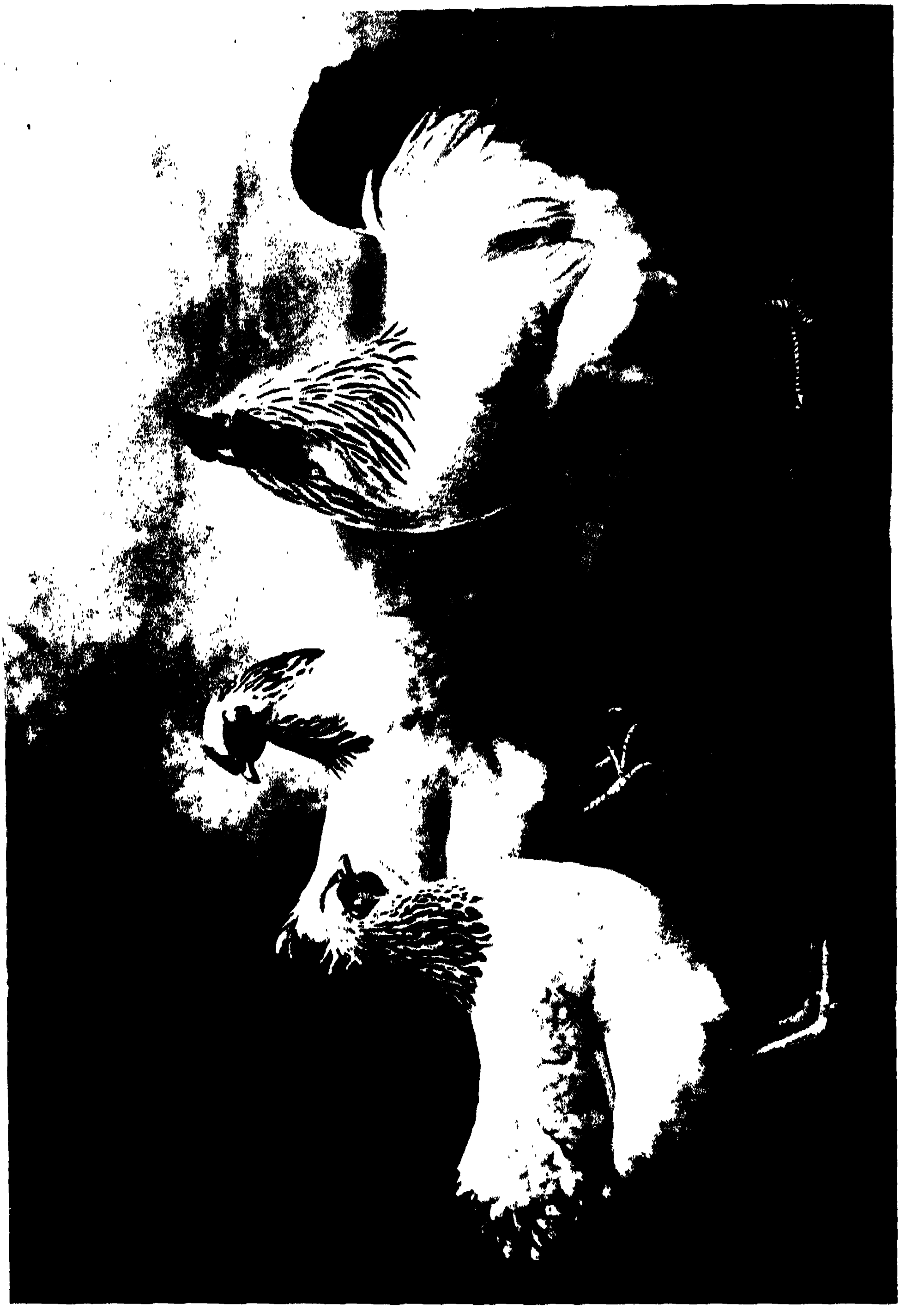


Columbian Wyandottes.

(*The property of Miss Ady Peel-Holmes, Moor House, Forton, nr. Garstang.*)

1st Prize Winners at Crystal Palace, Dairy, York and Columbian Wyandotte Club Shows.

or no natural shelter, the production of winter eggs, the rearing of early chickens, or the rearing of turkeys would be the height of folly, as it would be almost impossible to achieve success under such conditions. If, on the contrary, the situation is warm, dry and well sheltered, any branch can be undertaken. Upon heavy clay soil the white-legged varieties generally do badly, and if one is living on such a soil, then a yellow-legged breed should be selected. The best soil for poultry is one consisting of a medium loam, resting on a gravel subsoil, and the best situation for all kinds of fowls is on the side of a hill facing south; if poultry do not thrive well under these conditions they will thrive nowhere. In the third and last place, one's own inclinations should be carefully considered when deciding upon the branch; and really this is a matter of the greatest importance. Some people prefer one branch, some another, and this fact should always be taken into careful consideration before one finally decides upon which particular work one is going to concentrate one's energies.

While the various breeds of poultry are divided into two great classes—the Fancy and the Utility—they are economically divided into three classes, namely (*a*) the general purpose, (*b*) the laying or non-sitting and (*c*) the table. The first class, the general purpose, are the best all-round fowls, as they possess the qualities of both the laying and table classes; they do not lay as many eggs as the laying breeds, but they make better table chickens; they are not quite so suitable for marketing as the latter class, but they are better layers. Their chief point, is that they are excellent winter layers; if hatched at the right time of spring they produce the bulk of their eggs during the colder months of the year, when eggs are scarce and fetch a high price. As a rule, they are the most useful birds for farmers and others to keep, unless they wish to specialize in a particular branch, when probably one of the other two classes would meet their requirements better. Combining as they do the useful qualities of both the non-sitters and the table chickens, they can be used for either purpose, and this is a point which appeals to many poultry-keepers. The laying or non-sitting class excels, as would be naturally expected from the name, in egg production. The birds of this section are wonderfully prolific, the eggs are large, generally weighing over two ounces, and they are hardy and quick growers. Unfortunately, the greater portion of their eggs are laid during the spring and summer, when eggs are plentiful and cheap; generally speaking, they are very poor winter layers. The less said about their table properties the better, as they are so poor, the flesh being stringy and hard, while it is almost impossible, however generously they are fed, to fatten them. The table class is composed of the breeds that are the most suitable for marketing; the birds possess white legs and flesh, they are, as a rule, quick growers, they lend themselves readily to fattening, and they kill in excellent condition. Some of the table breeds are rather delicate, and only thrive under favourable conditions. It is interesting to note that all the general purpose breeds lay brown eggs, and the non-sitters white, while some of the table breeds lay white and others brown eggs.

VARIATIONS (*see* " Breeds ").

VARIETIES (*see* " Breeds ").

VARIETY. A group subordinate to species.

VENT, DISEASES OF. This subject has already been touched upon in describing the diseases of the egg-organs; but in addition to the prolapse there described, there is a complaint of a scrofulous nature, due to over-heating of the blood, and sometimes accompanying eruptions in other parts of the body. This is indicated by small pustules forming around the orifice and about the roots of the tail. It is supposed to be prevalent chiefly among poultry kept in confined runs, especially when they do not get a proper supply of green food regularly; and it can be cured by the use of a mild coal-tar or permanganate lotion followed by the application of a little carbolized vaseline. Internal physicing should also be resorted to—a dose of Epsom salt now and again being as good as anything, while a mild tonic, such as the addition of a pellet of iron sulphate to the drinking water daily, will assist in clearing the blood. It should be added that the condition just described must not be confounded with the irritation at times caused to poultry by skin-vermin. If there be reason to suppose that these are at the root of the trouble, the treatment recommended for that particular plague must be substituted for the treatment here recommended for the disease.

VENTILATION, GENERAL (*see* " Housing ").

VENTILATION IN INCUBATION (" *see* Incubation ").

VERMIN (*see* " Enemies " and " Parasites ").

VERTIGO. Vertigo, or " megrims," is a distressing complaint, in which the affected bird twists its neck round and round as in a sort of paralysis. It is supposed to be a mild apoplectic seizure —pressure of some sort at all events upon the spinal cord or some one or other of the nerve centres of the brain. Cases vary very much in degree, some being more severe than others; and it is not always easy to determine whether there is insensibility or otherwise, although if a bird's leg be pricked by a pin this will generally give some indication as to the precise state of affairs. Sometimes a bird is able to stand, but twists its head on one side and does not appear to be able to see straight—or at all; another time the bird cannot stand, but lies with its neck contorted into all shapes, apparently helpless. This is paralysis or apoplexy—vertigo intensified; and it is difficult to know where to draw the line between one and the other. As to treatment, next to nothing can be done. The bird must be kept quiet and, in some cases, it has been found that the letting of blood from one of the veins under the wing will give relief; this, however, is a dubious remedy and one which cannot be recommended, especially to a novice. On the whole it is best to leave matters absolutely alone—giving (if anything) a dose of castor oil.

VULTURE-HOCK. A number of stiff feathers projecting from the hock of birds with feathered legs, from which a perfect bird should be free.

WASHING FOWLS (*see* " Shows and Showing ").

WATERFOWL. ORNAMENTAL. Although there would be an incompleteness without some reference to ornamental Waterfowl in this work, the notes must necessarily be brief, and the descriptions limited to a few breeds; such a production as that of fancy ducks being of comparatively insignificant importance, and only profitable in exceptional circumstances. To deal at all comprehensively with the whole subject of fancy Waterfowl would entail the compilation of a bulky volume, but some few of the better known demand short notice here, together with a few hints relative to general management.

There is some small demand for ornamental ducks for the stocking and replenishing of public and private lakes and ponds, but it must obviously be altogether too limited to influence the practical producer to more than a small " side-line " production, and such should only be undertaken in situations which may not be more profitably stocked with fowl commanding a smaller but regular marketable value. On the other hand, of course, the keeping and personal breeding of purely ornamental birds of this description is one which appeals to many amateurs who are so circumstanced as to be able to indulge their fancy.

Some of the most successful breeding of this class of stock has been conducted under conditions which practically leave the birds to their own devices, and advantage may be taken for this purpose of a shrub-covered island in a lake, or a stream or pond surrounded by plenty of thick cover. Fancy ducks may also be very well kept in an orchard, the edges being wire-netted, provided some suitable piece of water is accessible, or it is possible to construct a pond; masses of rhododendrons, laurels, and similar shrubs should be planted at the water side to afford cover. The question of cover is an important one, because if it is adequate its shelter will assist the birds to withstand the severity of the English winter, although most foreign ducks may be acclimatized if properly cared for. Moreover, inasmuch as the breeding in confinement of some species is at least difficult of attainment, it is essential that the birds be provided with favourable surroundings, as far as possible secluded, and protected from vermin. Yet although cover is necessary, so also is a sunny site, and the evergreens must be so arranged as to give the birds the opportunity of sunning themselves when they wish.

Most ornamental ducks are naturally much more inclined to be wild and shy than are those which have been more persistently domesticated, although with careful treatment they may soon be made comparatively tame. Needless interference or intrusion is to be avoided, and all the attendant's actions should be deliberate. All unexpected movements must be avoided in their neighbourhood, and no unnecessary attempt should be made to handle them at any time.

As nearly all the species have remarkably strong powers of flight, keepers of ornamental waterfowl—as well as the ordinary wild duck—must have recourse to pinioning in order to prevent undesirable migration. The adult birds must be attended to in this particular at the time of stocking, if it has not already been done, and the young should be pinioned before they are able to fly. The old-fashioned method of pinioning, which is unfortunately the one most generally recommended and practised, even in these days of enlightenment, is that of amputation—with the addition in some cases of cauterization. This clumsy and brutal operation, which involves the entire cutting away of the flight joint of the wing, has many times been shown to be as unnecessary as it is inhuman.

To successfully impede the power of flight, without causing unnecessary distress to the fowl, or in any way detracting from its appearance, the method suggested by Dr. Gadow is the simplest and most effective. It merely consists in the severing only of the extensor muscle of the wing, and as this is the muscle by which the wing is straightened, it necessarily follows that not only is flight prevented by this simple operation, but also that there is no unsightly drooping of the member. Regarding the exact location of the muscle in question, and the method of operation, the novice should consult a veterinary surgeon. The mere removal of flight feathers is not only damaging to appearance, but is more or less inadequate and is at best only temporary.

Although many kinds of ornamental ducks may, in a suitable and safe situation, be allowed to hatch and rear their own young, it is in some cases not only preferable, but necessary, to entrust that work to Silkies, Bantams, or other small hens. It may, however, be recognised as a general principle, that the hatching and rearing is better done by the actual parents—when possible. It should be noted that some of the smaller kinds hatch in a shorter time than the large domestic ducks.

The feeding of fancy ducklings should be, as far as possible, imitative of the natural diet of the species, which should be previously ascertained, but most of those commonly kept in confinement may be commenced on a dietary including a small quantity of finely-chopped hard-boiled egg, with barley meal, oatmeal and maize meal at discretion. Canary seed, groats and duckweed may also be placed in the drinking water, in a shallow earthenware vessel. Small earthworms should be given them if procurable, otherwise finely-chopped liver or other suitable raw meat.

Blue Crested Duck.

The property of Mr. Richard Cape, Gatewood House, Exbury, near Southampton.

Winner of 1st Crystal Palace and 1st Diss, 1908.

The adequate feeding of the various species necessarily differs in some respects, and in important essentials. In a general way wheat, barley, buckwheat, split maize, hempseed and other grains of common use are suitable for the adult birds, according to the season and conditions; but there are many species requiring a quite dissimilar diet—especially in the case of those birds which belong to the oceanic section, the rearing or keeping of which upon fresh water is attempted. It is, therefore, impossible to do more than generalize in these brief notes, a fact which the reader is invited to keep in mind. The best way to feed corn to waterfowl is to place it in shallow pans with water and duckweed, and, above all, over-feeding is to be avoided. The conduct of the birds is the best indication in the latter connection—over-fed birds will too constantly doze on the water or the grass, while the moderately-fed will respond to the approach of the attendant at meal times. Most of them retain in some measure the wild instinct to remain in hiding during the greater part of the day, an to search for food in the evening; the.. most active time commencing with the approach of twilight, when they become fully alert, chasing insects and hunting banks and shallows for natural food.

For the present general purpose it will be sufficient to briefly indicate some few of the kinds most commonly found upon ornamental waters in this country. In addition to the Mallard or wild duck, and the ordinary domestic descriptions to which previous reference has been made, which are used ornamentally as well as commercially, the following are worth some special attention, and most of the species mentioned may be recognised in the various public collections, which are within easy reach of the Londoner.

—— **CALL DUCK OR DECOY.** This duck, which Darwin described as chiefly remarkable for small size, has had some vogue with fanciers for exhibition purposes. It is a popular description for the stocking of lakes, and is of some use as a decoy. It is easily tamed. There are two varieties, the white and the grey, which have been aptly described as Bantam Aylesburys and Rouens respectively.

——**SPOTTED BILL.** This is also an exhibition bird, is easily acclimatized, but is impatient of confinement. In appearance it is very handsome, with the peculiarity of a black, red and yellow bill—from which it is named. It is considered the best table duck of India, its native country.

—— **CAROLINA DUCK.** A native of America, in which country it is called the summer or wood duck. It is a very beautiful species, lives long, and thrives in confinement; but there is a tendency to increased size in domestication, as in the case of the Mandarin. The head is crested, and the plumage gorgeous.

——**MANDARIN DUCK.** A Chinese species, very similar to the Carolina, and rather better known to the fancier, with whom it is a great favourite; both are, however, not infrequently shown in the same class. It is a very small, neat, roundish bird, with indescribably bright plumage. The drake is inclined to be quarrelsome in close confinement, but the species breeds freely in a state of domestication.

Chinese Geese.

—— **WHISTLING DUCK.** The white-faced Whistler, also called the tree duck or the widow duck, is perhaps the one most widely known to fanciers, although the red-billed tree duck (or black-bellied Whistler) is a handsome bird. There are several species of tree ducks, all of which perch in trees ; and others occasionally seen in English collections include the Black-billed, the Fulvous, the Spotted, the Indian and the larger Tree duck.

——**TUFTED DUCK** visits and breeds in this country in a wild state, but is also kept in domestication, being an ornamental fowl, and hardy in confinement—breeding in the second year. They have been kept upon a farm pond in Sussex, in company with the ordinary domestic varieties. An alternative name is "Tufted Scaup."

Sheldrake.

——**SHOVELLER** is remarkable for the expansion at the end of the mandibles, being in effect a spoon-billed bird in that particular. Owing to the central position of the legs, it is a better walker than most ducks. The common Shoveller is smaller than the Mallard, but larger than the Widgeon. It is a winter visitant to this country, but breeds freely in domestication, although the young are not easy to rear. Its general appearance is attractive.

——**SHELDRAKE.** The Sheldrakes are practically a connecting link between ducks and geese, very much resembling the latter. They are capable of being tamed, and breed in captivity. The common Sheldrake, which winters and breeds in Britain, is a handsome bird, including green, white and chestnut in the colouring of its plumage. The Ruddy Sheldrake (the other European species) is often found in collections of ornamental waterfowl; as also is the Variegated Sheldrake, and sometimes the Australian species.

——**TEAL.** Superficially, the Teals chiefly differ from the true ducks in that they are more slender in form, and that their feathers are longer and more pointed. There are numerous species of these small birds, of which the common Teal is plentiful in Britain—it is a beautiful bird, of not more than about fourteen inches in length. It will breed freely in suitable situations, and was known in a state of domestication in the time of the ancient Romans. The Japanese Teal is also a beautiful species, but has not yet, we believe, been bred in captivity, and the same remark applies to the Chestnut-breasted Teal.

——**GARGANEY.** This is another British species of Teal, but is considerably larger than the common species, although smaller than the wild duck, or even the Widgeon. It is tamed with very little difficulty, and will thrive without much attention in a suitable situation. The plumage of the male is handsome, and the species is esteemed for table purposes.

——**GADWALL.** This is also called the Grey duck, and is marketed in considerable numbers for table use. Somewhat like the female Mallard in appearance, it is rather smaller in size. It visits Britain in small numbers, but although it is a very shy bird, it may be successfully bred in captivity.

—— **PINTAIL.** This genus is chiefly remarkable for length of tail, which tapers to a point. The following species have been commonly bred in domestication: the common Pintail, a handsome bird, of about the size of the Mallard, but in shape rather longer than the true ducks; the Chilian Pintail, fairly common in collections, and a free breeder, the youngsters hardy, and easy to rear. The Bahama Pintail (of another genus) is at times exhibited. It is a hardy bird, breeding well and regularly in captivity, and of attractive appearance.

—— **WIDGEON.** The common Widgeon, which is a winter visitant in Britain, and is sometimes called the Whew duck, or Whewer, is easily tamed, and breeds in captivity. Its total length is about eighteen inches, and its flesh is good for the table. The American Widgeon is a larger bird (about four inches longer), and is very handsome. It has been bred in captivity in this country, but only to a comparatively limited extent. The Chiloe Widgeon is also a beautiful species, hardy, and easily tamed.

—— **POCHARD.** Of the numerous species, the common Pochard is a frequent winter visitant to Britain, where it is also called the Dun-bird, Diver, etc. It is smaller than the Mallard, but rather larger than the Widgeon. The Red-crested and the Rosy-billed Pochard may also be reared in captivity.

—— **CRESTED CHILIAN DUCK.** In addition to the Carolina Duck, in which the head is crested—with the tendency for the crest to become more and more developed with continued selection and breeding in captivity—the Crested Chilian Duck, or brown-bellied Chilian Pintail, deserves notice as an ornamental waterfowl. This South American bird is of a fair size and is characterized by a delicate bill, elongated tail, and round, deep body.

The Crested Chilian is found on the Falkland Islands, but they go inland to breed, making a thickly-lined nest of down. It was from these islands that the first live specimens were received at the Zoological Gardens in 1887, since which time they have bred freely in captivity; both in the Gardens and upon the ornamental waters of private collectors.

The colour of the plumage is similar in male and female, being red-brown upon the upper part of the body, merging into lighter shades on the top of the back; the crown being of a darker hue, and culminating in a long crest. The breast and under parts of the body are a dull white, the feathers for the most part being tipped with brown. The wing coverts are brown; the wing bar purple and green with a metallic sheen, the feathers being edged with white. The mandibles are peculiar, in that the upper one is black and the lower yellow in colour; the legs and feet are black, and the eyes orange. The eggs are of a dirty or brownish-white colour, and the normal clutch consists of five.

WATER GLASS (*see* "Eggs, preserving").

WATER SUPPLY. The importance of the water supply in the poultry-yard cannot be exaggerated. To deprive fowls of such an element of life is sheer cruelty, albeit it is probable that if fed upon moist food they could get along without it. But to give fowls impure water or to allow them access to it is a fatal proceeding that will very soon bring its reward in the shape of disease. Why is it that nine out of ten farmyard chickens suffer from gapes? Gapes is frequently contracted through the medium of bad water. On a farm there are difficulties in the way of ensuring a good water supply for the fowls; in the ordinary poultry-yard there are no such difficulties. Summer is the time when this matter requires very especial attention. Sun-heated water is most dangerous, and under a hot sun water very soon becomes warm; in that state it may be described as sour or "bad." Chickens at such time are naturally thirsty and they will drink gallons of the bad, sun-warmed water if they are given an opportunity of doing so. Under conditions of good management, however, that opportunity should never occur.

—— **REGULARITY OF SUPPLY.** Regularity and frequency in the matter of taking round a water-can are all that is necessary to guard against the evils of bad water. In the case of chickens, the can should be taken round as often as the food basket—that is to say, three times a day at least. Younger birds are more often fed, therefore they would be more often watered. The adults can have their supply renewed twice per diem, morning and evening. An invariable rule should be made about this watering—to do it at certain times and just as frequently as has been suggested. One common practice should be studiously avoided—that is pouring the fresh water into what is left of the old. When the vessel is replenished, the old water should first be thrown away, then the vessel thoroughly rinsed round, and finally the fresh poured in.

—— **WATER VESSELS.** So long as these are kept absolutely clean, the material of which they are made is not of great consequence. Various patterns are sold by poultry appliance makers, any of which may be considered practical. Round troughs of enamelled iron cannot be improved upon for old birds and grown chickens. For chicks under six weeks old a really adaptable fountain or trough has never been discovered, so far as the writer is aware. The ordinary shallow fountain of galvanised zinc is worse than useless, being much too light, the water easily spilt, and troublesome to refill. One of the best methods of supplying water is to hang on to the front of the coop a drinking cup similar to those used for exhibition training pens and seen at shows. A trough of enamelled iron, of the kind mentioned above, only of the smallest size obtainable, is also good. The large size costs 1/6 and the smaller about 10d. Vessels of this nature require very careful scrubbing and boiling out at least once a week. A green slime collects at the bottom and round the sides — this must be frequently cleaned away. The troughs should be brought in overnight, left in a pail of boiling water, and in the morning scrubbed with a hard brush and "Monkey Brand" soap.

WATTLES. The red depending skin on each side of the base of the beak.

WEASEL (*see* "Enemies").

WEB. The flat, glossy part of the feather on either side of the shaft; also the skin between the toes and between the joints in the wing.

WEEDING OUT (*see* "Marketing").

WELSH FOWLS (*see* "Sussex Industry").

WHEAT (*see* "Feeding Stuffs").

WHIP-TAIL. A tail in which the sickles and tail-coverts are short and very slightly curved, and the inner quills are closed up; a point of merit in game fowl.

WHISKERS. Tufts of feathers round the ears.

WHISTLING DUCK (*see* "Water-fowl, ornamental").

WHITE COMB (*see* "Combs, Diseases of").

WIDGEON (*see* "Waterfowl, ornamental").

WILD DUCK (*see* "Mallard").

WING-BAR. A bar of dark colour across the wing.

WING-BOW. The shoulder or upper part of the wing, very prominent in game fowl, and called the shoulder butts.

WING-BUTTS. Includes the above and the points of the wing called the lower butts.

WING-COVERTS. The smooth, thin feathers covering the roots of the secondaries.

WORMS (*see* "Parasites").

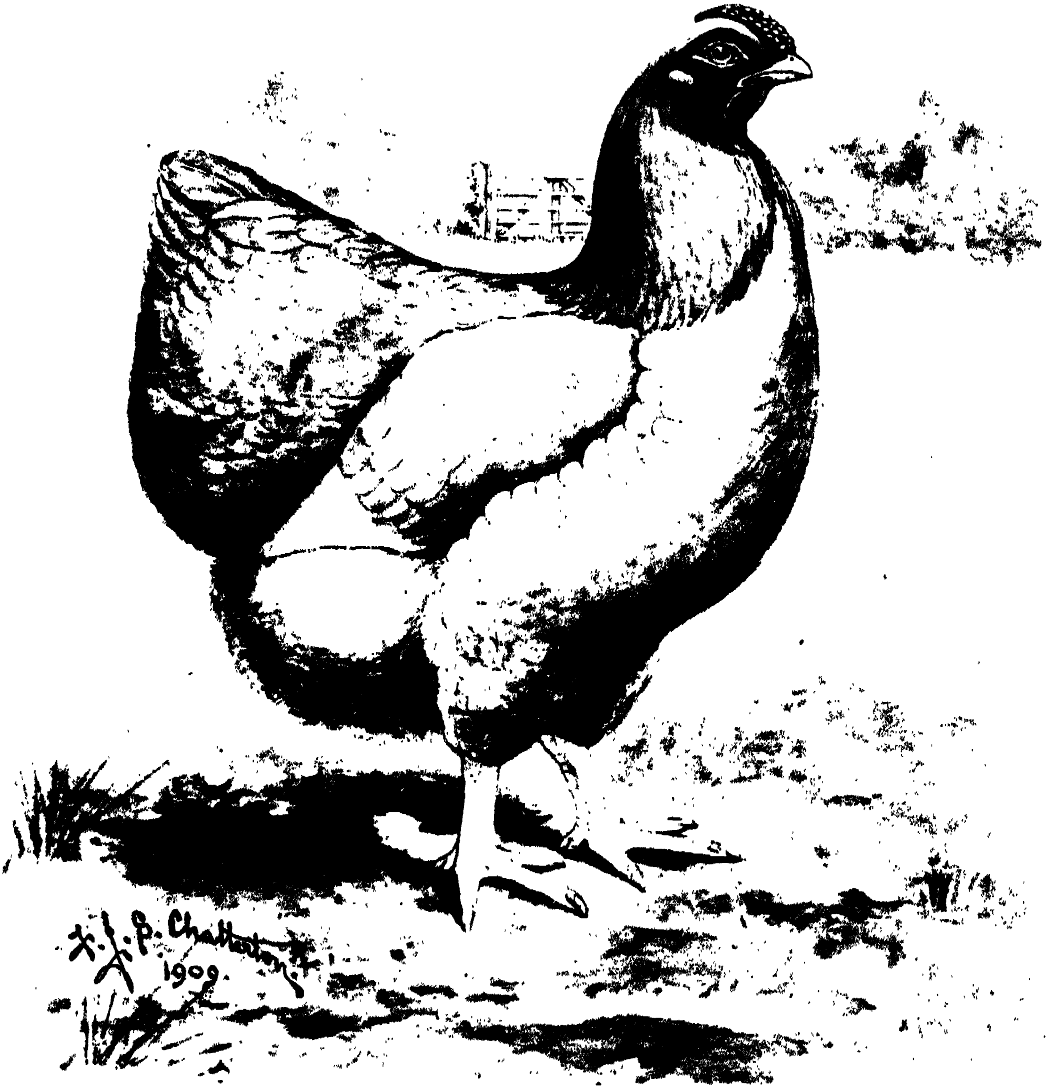
WRY-TAIL. A tail inclined to one side.

WYANDOTTES. The name of the Wyandotte is, as well as its origin, distinctly American. As the Americans are justly proud of their qualities and unhesitatingly place them foremost as a beautiful and useful member of the poultry world, so we may be equally proud of the improvement English breeders have effected in matters pertaining to feather marking and size. It has often been the case that America has originated a breed of great usefulness and England has improved it in appearance. Anyway the points of excellence of the Wyandottes warranted their popularity from the beginning, and their boom has been continual, for there are none who could help being impressed with their beauty and profitable qualities. From the original Silver Laced Wyandottes of 1871 have sprung no less than twelve other distinct varieties, some of them being of purely American origin, others simultaneously produced in England, the very latest, *viz.*: the Blue and White Laced Blacks and Spangled being of purely English origin. The Wyandotte is a capital layer of tinted eggs, very hardy and easy to rear, a good sitter and mother, though not excessively broody and a really nice table fowl, maturing early. By comparison with other poultry it is of medium size, with rather a short neck and legs, short and broad head, surmounted by a low flat rose comb, broad in front and tapering nicely as it follows the curve of the neck. Under the sub-headings of the varieties which follow, will be found a description of their origin, colours and method of breeding, and for more exact detail of feathering the standard of the poultry club, or any of the specialist clubs, may be consulted. The general characteristics, of course, are the same in all colours, since these make the breed, and colour the variety. These general characteristics are as follows. The cock: head and neck, stout and broad; comb, rose, firm and even on head, full of fine work; low and square at front, tapering towards the spike which should follow the curve of the neck. Face, smooth and fine texture. Earlobes and wattles, medium length, fine in texture. Neck, medium length and well arched with full hackle. Body, breast, full and round, keel bone straight. Back, broad and short. Saddle, full and broad, rising with a concave sweep to the tail. Wings, medium size, nicely folded to the side. Tail, well developed, spread at base, the true tail feathers carried rather upright; sickles of medium length. Legs and feet: thighs, of medium length, well covered with soft and webless feathers; fluff, full and abundant. Shanks, medium length, strong, but fine in bone. Toes, four in number, straight and well spread. General shape and carriage, graceful and well-balanced, resembling a Brahma. Size and weight, matured cockerels 7 lbs., adult birds 8½ lbs. The hen: head and neck—head, comb, face, earlobes and wattles as in the cock, but the appendages smaller. Neck, medium length with short full hackle. Body, to correspond with that of the cock. Back, short and wide at shoulder. Tail, well-spread at base. Legs and feet, as in the cock. General shape and carriage to correspond with that of the cock. Size and weight, pullets 6 lbs., adult hens 7 lbs.

Among the serious defects are the following: Feathers on shanks or toes. Permanent white or yellow in earlobes, covering more than one-third of their surface. Combs other than rose or falling over on one side, or so large as to obstruct the sight. Wry tail, deformed beaks, crooked backs. Shanks other than yellow in colour, except adult cocks and hens, which may shade to light straw colour (see, however, notes on Blacks, Partridges, and Silver Pencilled). Feathers others than white in Whites. Any conspicuous spotting or peppering on ground of the feathers in Silvers or Golds.

—— **SILVER-LACED.** This is, as we have said, the forerunner of the variety. It is the first step which counts the most; where one has led the way it is comparatively easy for others to follow. The story of the Wyandotte may be told by comparing the first Silver Laced introduced to the first little rill which trickles down the mountain brow, moving onward and onward, gathering strength and volume as it advances, ever widening and deepening in its course. The varieties which have since been introduced have swollen the little rill into a great river. Its originator is unknown and thus we are unable to give that tribute of praise to the fancier who gave the world a wonderful creation of his skill and labour. This is to be regretted, for however much praise is due to the fancier who improves and beautifies his flock, much more is due to the one who originated what is, without doubt, the most popular, most all-round useful and in the eye of many beholders the most beautiful of all our established breeds of fowls. All we know with certainty is, that in 1871, Messrs. Ray and Benson and the Rev. A. S. Baker, of America, were in possession of the foundation material of the Silver Laced Wyandotte, having tried to make a Sebright marked Cochin with rosecombs from the Sebright Bantam and Yellow Chitagong, and subsequently on these were crossed the Silver Spangled Hamburgh and Dark Brahma. It was five years later, in 1876, that a Mr. Payne of Binghamton, N.Y., presented for admission to the standard of the American Poultry Association, a fowl which he named American Sebrights, bred from the original cross mentioned and crossed again with the Silver Spangled Hamburgh, the Buff Cochin, and it is said, also with a black fowl of the Breda breed to enrich and give permanency to the lacing. Rome was not built in a day, and the Silver Laced Wyandotte under the name of American Sebright did not satisfy the Poultry Association, which contented itself with acknowledging the promising merits of the new breed. The delay prompted improvement, and for another seven years breeders persevered. A new cross of Silver Spangled Hamburgh and Dark Brahma appeared, much in advance of other crosses in type and desirable qualities, and during these years the three lines of breeding named were brought together, effecting such improvement in type, colour and utility purposes that the Silver Laced Wyandotte was admitted to the standard under this name in 1883. Keeping in mind the number of different crosses used, it is not surprising that for long, and even to this day, single combs appear with rose combs, feathered with smooth legs, white with red earlobes, blue with yellow legs, and the present high quality from almost chaos is a tribute to the ability of those who worked for their improvement. On the other hand, the favourable qualities of the Silver Laced Wyandotte have come through judicious crossing and improvement of each cross. The Hamburgh has made the breed prolific and precocious. The Brahma, with its large frame, robust constitution and quiet nature has, modi-

PLATE No. 103



Blue Wyandotte Hen.

(The property of Mr. H. C. Ardron, The Fosse, Syston, Leicester.)

Winner at Birmingham and Darley Dale, 1908.

fied undesirable characteristics in Hamburghs, Sebrights, etc. View the various crosses carefully and it is evident that we have as perfect a combination of utility properties in the Wyandotte as it is possible to conceive, while the eye tells us there is no more beautiful creation in the whole of the poultry world. There is little to wonder at in the unprecedented boom it had in the land of its birth, and when introduced to England, so far as we can ascertain, in 1884. Our introduction describes the general characteristics of the Wyandotte and need not be repeated. They should be the same in every variety of the one breed, colour alone making the variety, type the breed. The Silver Laced is the recognised head and original of all the varieties and the proper and only true colour alike for male and female is black and white on the surface, while the under fluff may be a slate or dark grey. To give the slightest encouragement to any other colour is to court poor results in the young stock. Purity of colour is an absolute necessity when success is hoped for. In the male the neck, back, saddle and wings should be a silvery white, the breast and other portions that are laced, white centres with black edging. The principal wing coverts, white broadly laced with black, forming good laced bars across the wing; the secondaries black on the inner web and white with a broad black lacing on the outer web, edging each visible feather with black. The breast and under parts are white laced with black, from the throat round to back of thighs, the tail a glossy green-black, free from any trace of white, the neck and saddle hackles alike being striped clearly with a dense black down the centre of the feathers. In the female we have the same striped neck hackle and black tail and secondaries of the wing as in the cock; the rest of the body white with each feather laced round with black. Regularity and rich intensity of black and a pure white are the main points in the value of marking. Provided the lacing in both sexes is a pure black, even throughout and clearly defined, latitude is permissible as to depth, but faults to be strenuously avoided are:—(1) The horse-shoe feather, or one in which the lacing only goes partly round in the form of a crescent, which is common, especially on the breast and shoulders of the female, and it will be generally found that if strong here there is a failing in the lacing of cushion and *vice versa*. (2) The double-laced feather, or one with a fringe of white bordering the outside of the black, is a nasty fault, very difficult to eradicate, and here again it is more marked in the females than the males, and is most frequently seen on breast and more especially at the throat. (3) The mossy or streaky feather is a serious trouble in the pullet breeders. Instead of a clear white centre we have it peppered with black, and after the first moult this and other faults of feather nearly always appear. The pullet showing moss should be discarded from the pullet-breeding pen. (4) The V-shaped lacing *versus* the rounded feather is inherited from the Sebright. It is objectionable in so far as this class of lacing never seems to show sufficient of the white centre to make all

Head of Silver Laced Wyandotte.

appear regularly laced, but counterbalancing it is generally the better black. (5) The zig-zag inner line of black instead of a clear edging showing sharp definition is another fault, but more common on the breasts of the cocks, and on the lower parts, than in the hens. All that has been said of the faults of lacing apply equally to cocks as to hens, but the cocks have further points of difficulty to obtain, and the top colour must be a pure silvery white, the striping in neck and saddle hackle, lacing of wing bars and lining of secondary feathers on wing being the only black permissible. (1) Sooty top with rusty saddle and hackle is a serious fault most difficult to breed out and so also is the (2) brassy top which looks as though the bird had been tanned by the sun and made yellow thereby, but equally serious is the (3) plain top or want of the black stripe in neck and saddle hackles; such birds have lost a great part of their beauty and the fault should be heavily penalized, equally with (4) indistinct or spangled bars on wings.

Turning from faults of colour and lacing, which are the most important as they are the most difficult to eradicate, great attention must be paid to shape and type as described in the introduction, and further faults to be carefully guarded against are the white lobe, which has come from the Hamburgh, and combs too, large or insufficiently worked, or with leaders straight like the Hamburgh instead of following curve of the neck.

The breeding of this fowl in its perfection is not an easy matter, and whereas fairly good exhibition cockerels and pullets may be obtained from the same pen, experience has taught that it is the easier and the surer way to mate two seperate pens, to produce exhibition birds of the two sexes, and indeed, so far has this practice now been carried out, that it would be practically impossible to get a pen of birds from any breeder which could be described other than as cockerel or pullet breeders. To begin with the cock-breeding pen. A standard cock, somewhat heavily laced, should be used and he must be good in black, free from white in tail, light fluff, frizzled thighs in his undercolour. With him must be placed large, typical hens, bred from strain-producing exhibition cockerels. These females, like the cock, must be good in their black, and the hackle clear, silvery and quite free from soot, with a good stripe. Mossiness (provided the outer lacing be sound black) is nothing in a cock-breeding hen, for the feathers on the back of the female have no influence on the top colour of the male progeny, provided the feather is in its pullet stage black not brown. Cocks bad in top colour are the result of breeding from sooty or brassy neck hackled females. The breast, however, need not be heavily laced, for the best-breasted cocks often have light-breasted sisters and these throw frequently the best-breasted cocks mated to a standard male. Comb, legs and shape must be the standard quality in each.

The pullet-breeding pen must, of course, be selected with equal care in relation to pedigree. Both male and females must be such as have in their generations produced exhibition pullets. Here the females must be standard birds as described, carefully avoiding the faults of any tendency to brown or grey, patchiness on shoulders, double lacing, or moss in cushion. It is preferable to breed from pullets too dark for the show pen rather than those with light lacing but the lighter laced pullets, if sound in fluff and undercolour, will generally produce good stock. The head of the harem in this mating is not an exhibition bird. He should be perfectly sound in undercolour and fluff, his breast lacing pure and rather heavy, and the feathers under the saddle hackle near the tail pullet laced. The tendency to-day in many otherwise good pullets is to a very dark neck hackle, especially at the base, and therefore the cock should, like the hens, be free from soot or darkness at the base. The art of pullet breeding has not yet been fully revealed to any breeder and, therefore, it is well to select some darker and some lighter than the standard required in hens, as it is impossible to be certain as to what particular depth of lacing will produce the best results with the male. Finally, never have in a pullet-breeding pen hens with legs spotted or green. The fault is sure to be reproduced in the females in this mating.

After the first moult the exhibition Silver Laced hens show many faults, but are none the worse for breeding on this account. Purchased from a reliable breeder, every confidence may be reposed in such birds, but the beginner has to be wary, for unscrupulous breeders will sell hens which may be either pullet or cockerel breeders, so far as the novice can tell by the eye, and the result of wrong mating will be accordingly disastrous. It is always better to go to a breeder of standing and pay his price, rather than perhaps save pence and lose pounds by purchasing birds bred haphazard and without pedigree. This applies even in purchasing young stock, the defects of which can be seen at a glance, but inasmuch as the majority of Laced birds are very different in appearance after the moult from what they were before, it is impossible for the novice, and even old hands to say with certainty whether the hen offered to them is a cockerel or a pullet breeder. (*See Plate No.* 93.)

—— **GOLDEN-LACED.** These followed hard upon the heels of the Silver. In 1885, the first mention was made of them in American poultry journals, and in 1888, or five years after the admission of the Silvers to recognition as a standard breed, it was evident that these laced fowls had come to stay. They were originated by Mr. J. McKeen, of Omro, Wisconsin, from a union of Pea Combed Partridge Cochins and Brown Leghorns, and although others were trying to create a new variety by using Golden Hamburghs and Partridge Cochins with Brown Leghorns and Black Breasted Game, none were so successful as Mr. McKeen in producing shape and colour. However, in both lines the pencilling of the Cochins and colour of the Leghorns have found their way into what should be solid golden bay centres and trouble them continually with mossing, the same as with the Silvers. Shortly afterwards the best Gold cocks were used upon the Silver Laced hens of other breeders, and very rapid advance in the lacing resulted. It would be well for the breed (if only from a utility standpoint of view) if the English importations had not been further crossed, for there is no doubt that type and utility properties have alike suffered by the introduction of the Indian Game. The object of this cross was to enrich the ground colour, which has become in many strains too dark in consequence, or perhaps the object was to get depth of colour in the lacing, with the result that the double lacing of the Indian Game is often hard to get rid of, and by double lacing is not merely meant the outer edge of gold round the black, but the double black lacing of the Game. This fault is gradually being eradicated, but not so with the dark colour, and loss of true Wyandotte shape, and while the strains which have had it introduced may be the better as table birds, they have lost much of the wonderful laying properties of the family. Where, however, this cross has been avoided, the Golden Wyandottes are in every point equal to the Silvers for all-round utility and in no degree less beautiful. The only point in which they differ from the Silvers is that of colour. The same stress must be laid upon a good black and lacing, and what has been written in reference to points and faults of Silvers are to be applied to Golds. The colour is the difference, and this is described in the standard as a rich *golden* bay, and much depends upon a true golden bay, laced with rich glossy black, being maintained.

The beauty of the bird lies in the symmetry of markings, and equally in the contrast of colour. This effect is lost in dark ground colour which, however else it may be described is not a golden bay, the true colour being as far from red or maroon as it is from that of lacquered brass. Brightness is most important, and with it we not only have the more beautiful male bird, but avoid the ugly shafting or streak of lighter colour down the centre of feather in the female. Nothing can be added to the remarks already made in regard to the exhibition points and mating for their production. All that has been said with regard to Silver Laced applies to the Golden. But it may be remembered that there are more strains to-day in England, than in the case of Silvers, where good birds of both sexes may be bred from the one pen. The good sense of many of their American admirers has, in that country at least, kept them within the lines of single matings, not striving for the extreme Sebright lacing which was once, far more than to-day, desired in both countries for Silvers. (*See Plates Nos.* 94 *and* 95.)

—— **WHITE.** This is a sport pure and simple from the Silver Laced, and a most favourable part of its early make up was that it at once showed their inheritance of proper Wyandotte characteristics. In the land of its birth it seems to hold the premier place in popular estimation, and in England, both on account of its attractive appearance and from the fact that it regularly takes such a high place in the laying competitions of the Utility Poultry Club, it has gained one of the highest places in the favour of the poultry world. As far back as 1872, white sports were thrown by the Laced, and up to the present day there is no strain of the Silver Laced (especially pullet breeders), which do not produce them annually. In the early days the White chickens were ruthlessly killed, and it did not apparently dawn on any breeder but Mr. Towler, of Thruxton, N.Y., that they were worth preserving, as a distinct breed of the Wyandotte family, which would produce a larger percentage of good birds on account of their being a self-colour. However, in 1885, the boom began and has proved no evanescent one, for undoubtedly they have earned their great popularity on real merit. In considering them from an exhibition point of view we must remember that their main features are the same as the other varieties, the only difference being colour, which must be absolute pure white, not only on the surface, but to the skin. The colour of comb and eye, and the white of the lobe must be especially good, any deficiency here being more heavily penalized than in Silvers, Golds and "pattern" breeds. The legs and beak a bright orange, but here the difficulty begins, for, whereas we want a bright orange as forming the contrast to the white plumage, such legs are often accompanied by a colour which is not absolutely pure. In handling many such birds it will be found that the pullets have a yellow tinge, noticeable, not only on the surface (which might be partly due to weather exposure), but in the fluff and undercolour, and also in the hackle. This difficulty was increased when English breeders took up the variety in earnest, and to obtain a purer white and better worked combs introduced into some strains the White Dorking blood, a cross which introduced faults of type and leg colour, and which even now sometimes produces extra toes. It is not easy to breed the White Wyandotte, however easy it is to breed birds apparently white until handled. It is no use trying to get good chickens from sappy or yellow tinged (as distinguished from sun tan and weathered tops) parents. No matter how big a cock or hen may look, if yellow in undercolour they must be kept from the breeding pens, and this will do more than anything else to establish a strain which, even in cocks, will stand a lot of sun and weather before becoming markedly yellow and discoloured on top. (*See Plates Nos.* 96 *and* 97.)

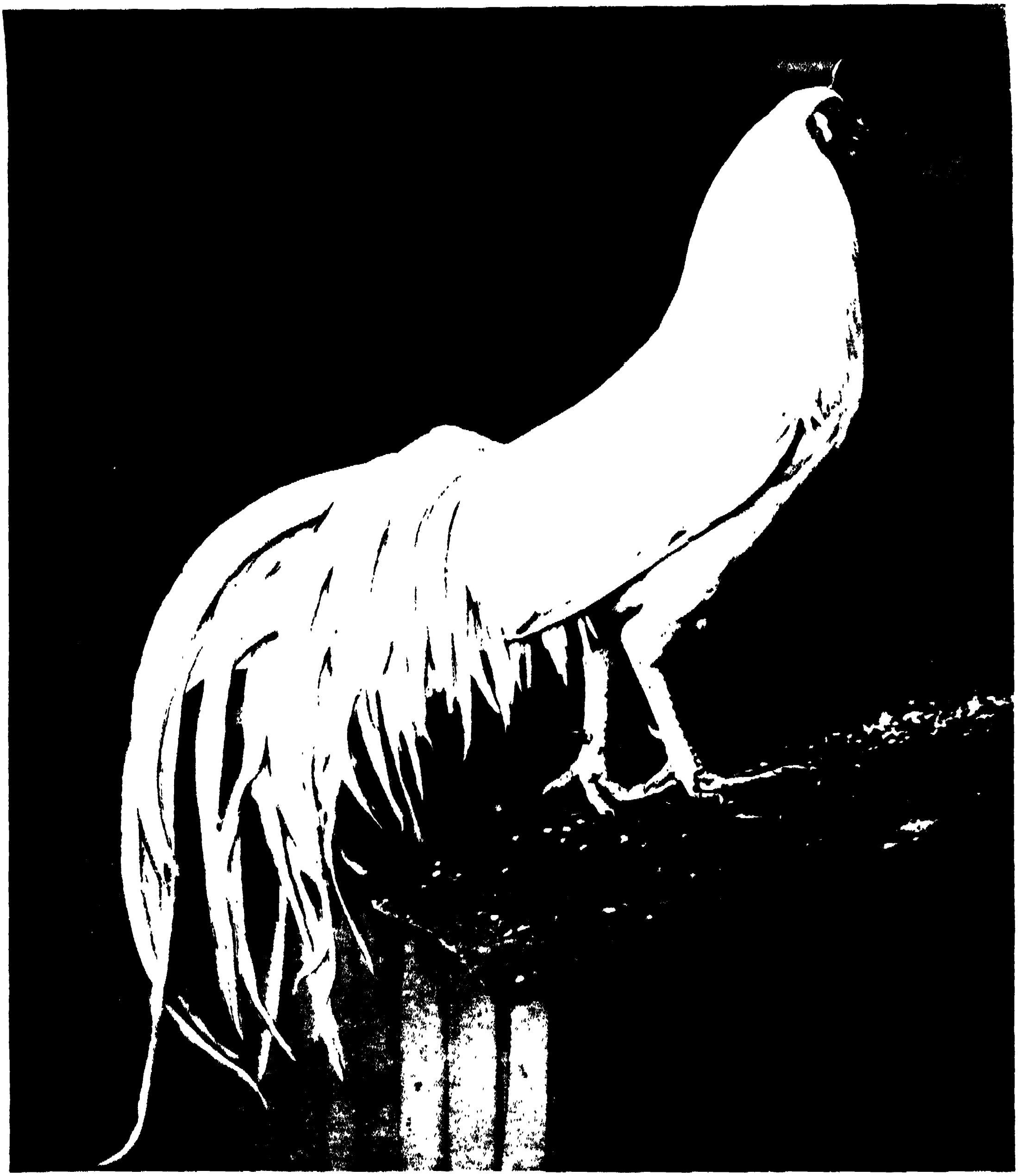
——**THE BLACK** may be said to be the next in order in the evolution of the Wyandotte family. Other colours preceded it in popularity in England, and when the boom of 1906 began there were practically none of this colour to be found except across the water, so that it is common to hear of the Black Wyandotte as having originated in or about that year. The fact remains, however, that Mr. F. M. Clemens, Junr., was breeding them in America so far back as 1885, or two years after the admission of the Silver Laced to the standard of recognised breeds, and he tells us that his first mating was a pen of black sports from the Silvers, the pullets being good in colour, the cockerels having a silver hackle, and it took eight years of careful breeding before they were admitted to the American Standard in 1893. For practical value they are at the front. No breed surpasses them as a fowl for general purposes. Black is a strong colour and Black Wyandottes are strong, hardy, thrifty, the best of winter layers, excellent table birds and quick growers. But notwithstanding these qualities their growth in popularity has been slow in America, and though introduced in this country years ago, they never "took on" till 1906, so that the original imported stock were again exported to the continent. Germany paid some attention to their systematic breeding. In Holland the birds went to farms where they bred in a haphazard way. The reason of this lack of interest seems to have been on account of the American Standard having discarded the yellow beak and shanks, accepting "black shading into willow or yellow with bottoms of feet yellow." It was left for English breeders to obtain what Americans said was unattainable on a Black fowl, yellow legs, and this effort practically began in the most unprecedented boom of 1906, than which there has been no greater for any variety of fowl since the old Cochin days. The breed now takes a foremost place among the varieties, but it cannot be said that the true Wyandotte is yet established, for as it took years to eliminate the effects of crossing when the Indian Game was introduced into the Gold Laced, the White Dorking, White Rock and White Cochin blood into the White Wyandotte, so it must take years to eliminate the results of Black Rock, Black Cochin, Black Leghorn, Indian Game, Partridge, Silver Pencilled and other coloured Wyandottes introduced to obtain yellow legs. Further its popularity created a greed for gain. Any kind of Black fowls with rose or double comb and yellow legs were purchased at every farm, and sold and bred from as Black Wyandottes, the pure breed at the time being in infinitesmal small numbers in England, and these either Americans, with dark legs, or sports from Silver and Gold Laced and Silver Pencilled Wyandottes. The results were what might be expected; jobbers and unscrupulous breeders made money fast, and many of those who purchased birds or eggs threw up in disgust a fowl which they purchased in good faith as Black Wyandotte, but which bred every colour save black. Yet the fault was also in purchasers of stock from these jobbers, and in the judges of the classes scheduled for Black Wyandottes making yellow legs a *sine qua non*, in denouncing dark-legged birds as mongrels, whereas these were the true Wyandottes, bred according to the American standard with dark legs for thirteen years, the yellow-legged birds being the mongrels. Had true Wyandotte type and shape and solid Black plumage been made the *sine qua non*, the yellow leg would have come with time by careful selection and crossing only with other varieties of Wyandottes, and no room would then have been found, either in the exhibition or breeding pens, for farmyard mongrels, the result of many unknown crosses, but as unlike the Wyandotte, as it is possible to conceive, having not a single qualification of this grand breed, and only resembling it in yellow leg and double comb. This is the more to be regretted because it was unnecessary, the Black Wyandotte being an established variety and only requiring crossing with other varieties of the same family and selection thereafter to obtain the yellow leg. Thus we would have avoided mongrelizing the breed. No surprise need be felt at the Silver Laced throwing back to Black, less even than that they should throw Whites. The Silver Laced was evolved from a cross with the Black Breda fowl and the reversion is thus at once explained. A black-plumaged fowl with yellow legs is so opposed to the natural laws of breeding yet known that the difficulty of obtaining them is well known to breeders of Black Leghorns, Black Rocks and Black Wyandottes, more so in the latter, because a newer breed, than either of the former, which have had a correspondingly greater number of years for selection, and yet after so many years are far from perfect. Perhaps as Chairman of the Black Wyandotte Club since its formation, the first Club Judge and a breeder of thirteen years, the writer may be allowed to quote from his own experience. A Black Wyandotte must first of all be a Wyandotte and then black, black to the root of the feather and not merely a surface black with white undercolour revealed by every gust of wind. Following standard type and colour and these things firmly established, must come the English standard of yellow leg. The first all-important desideratum is to be found in the standard dark-legged American birds and from that country the writer five times imported birds. To obtain the yellow leg these were crossed with Whites, Partridges, Silver Pencilled, Buffs, Dark Silver and Gold Laced of his own breeding, and certain birds imported from Germany, including a sound top, but white undercolour, cockerel. In the first year practically every female was dark-legged, but good black, and those cockerels which were sound in colour showed only a suspicion of yellow in shanks (but with yellow feet), or, if sound on top from the German cockerel, were white in undercolour and those with the best yellow leg showed white in tail. Convinced, however, that the solid black American females must have transmitted something of the quality of yellow leg to their progeny, breeding by selection was followed, and the result was that from the dark-legged pullets came forth a fair percentage of yellow-legged cockerels, far sounder than before in colour, while many of the females showed a decided yellow in feet, and a little in shanks. And so the evolution has proceeded, but there is no longer fear in using the dark-legged hens. It is from these all the best cockerels are bred. The yellowed hens are required for pullet breeding, and with them are mated the best colour in leg cockerels, not necessarily quite sound in undercolour, and if he has a little red on top, he is not discarded for pullet-breeding, since these produce the best green-sheened females. Lack of space prevents anything like elaborate details of the results of crossing the various colours with the Americans, but briefly it has been found that whereas the largest birds have come from the White cross, white is such a dominant colour that it more frequently than any other re-appears; moreover, the black is dull, lacking the beautiful brilliant sheen. If this cross is used the best results are from sappy Whites, the yellow apparently being, like red, productive of a brighter green-black. In using a self-colour the Buff Wyandotte is to be preferred to the White, but unfortunately good large typical birds of this colour are now scarce. From the Silver Pencilled cross have come the soundest undercoloured cockerels yet bred. The pullets, however, from this cross show pencilling. The Partridge and Gold Laced cross has produced the best pullets, a far larger percentage having good yellow legs and the brightest of green sheen, this undoubtedly being the result of red pigment. The cockerels have a corresponding tendency to show red in wings and hackle. Lastly there is the Silver Laced. This cross has produced good pullets and very fair cockerels, but unfortunately, as in the case of the Whites, dull in colour. Further results show that there is comparatively little difficulty in getting good yellow legs on the male birds and no difficulty at all if white in tail is allowed. It is popularly supposed that yellow leg and foreign feather either on top or white under, go together. These things have nothing to do with each other, though white in tail will always be accompanied by yellow legs. There is great difficulty in getting yellow legs in the females, but the dark-legged birds if sound to skin, and bred from good-legged cockerels, are the most valuable *cockerel* breeders. In mating a pen it is strongly recommended that while the cock should be as sound as possible, consistent with yellow legs, the hens should be equally divided in the pen as having dark and yellow legs. Thus from the one pen both cockerels and pullets may be bred fit for the show bench. Lastly, a word or two as to yellow bill. The experience of other breeders of black fowls with yellow legs shows that if we get yellow beaks in the females it will always be accompanied with a dull black, and the latter is too serious a fault to tolerate for the first perfection. On the other hand a yellow beak and good green sheen is possible—though rare in cocks—and should be encouraged. But we must never sacrifice colour for so minor a beauty as yellow in beak. (*See Plates Nos.* 98 *and* 99.)

——**BUFF.** The Buff is fast becoming extinct in this country, though still very popular in America, the land of its origin. Once again the Silver Laced is the foundation in all the known strains. These were mated to Buff Cochins, both by Mr. Geo. H. Brackenbury, of Auburn, N.Y., and Mr. J. Wharton, of Hawes, and in two other strains the Rhode Island Red was used, a breed of most valuable utility qualities, largely composed of Asiatic blood. This cross resulted in far too many birds being of a red rather than a buff colour, but inasmuch as the females used were Wyandottes, according to the generally correct theory that the hens give shape, and the cocks colour, these Buffs were true to type. Nothing much need be added to this account. It is necessary to choose a cockerel of sound even colour, a little denser than the exhibition standard requires. He must be buff to skin, quite free from mealiness, sooty undercolour, white in wing or thigh, and like the hens he must have the comb which is the hall mark of the Wyandottes. With him should be put hens even in colour, avoiding the faults mentioned in the cock and the objectionable *ticking* of hackle and tail common in many otherwise good birds. From such a mating of birds, *related* to each other good, Buffs may be bred.

——**PARTRIDGE.** The Partridge, or, as it is called in the States, the Golden Pencilled, soon followed the Buff, Mr. John Wharton making the first importation of the variety in 1896, and though the credit of its origin in America is conceded to Mr. Brackenbury, the imported birds come from a strain founded by the combined effort of Messrs. McKeen and O. E. Theim, and was made from the Partridge Cochin and Golden Wyandotte; probably some Indian Game blood was also introduced. Prior to this certain English fanciers, notably Messrs. Graham and Pettipher, had been at work on the same lines, but we believe that practically the whole of the many birds now in England descended from the American importations. There was, however, this great difference between the birds of the two countries, a difference still existing, and which makes it impossible for any exchange of blood between us—that whereas the English birds were, as the standard requires in pullets, a soft mellow brown colour, the Americans desire a red or foxy one, and it it quite possible that the English strains referred to may have been used to tone down that of American importations. Anyway, we have in the English shade and marking, a bird of ideal beauty, and of such merit, both as an exhibition and utility breed, that it is not likely ever, or not for many years at least, to be relegated to the ranks of the obsolete; and though the writer refused £100 for a cockerel of the Blacks, the Partridge can eclipse this, since as much as £175 has been paid for a noted winner. The cock should have a rich orange head, neck and saddle hackle harmonizing, both being orange or orange red, and each with an intense black stripe down the centre, but not running the full length of the feather, as this would give the objectionable smutty hackle at base. The breast, between the legs, thighs, raven black, entirely free from red ticking. The back a *bright* rich red (not the dark maroon so commonly seen). The tail, black and free from all white. The bar across the wing, black like the breast. With this bird must be mated hens or pullets as large as possible, and they must be bred from a cock-breeding strain only. Pencilling is of no importance, but the ground colour must be of the desired brown shade and above all the neck hackle must possess a good stripe, with a good orange edge. In the pullet breeding pen the cockerels must be from an exhibition strain of females. Pencilling here is important, and such birds will generally be plentifully pencilled and tipped with red on breast and thighs. Unfortunately faulty exhibition cockerels are sometimes sold as pullet breeders. These ruin a strain completely, so that pedigree and knowledge of the sire to be used, as being "pullet bred," is most necessary. With such a bird, of course, females as near exhibition standard as possible must be mated. The ground colour a rich light brown, avoiding either red or clay grey. Each feather must be pencilled with a darker shade, following the shape of feathers and the lines clearly and sharply defined. This pencilling should extend well up to throat right to the back and thighs, in fact, all over, except in tail, which should be black, and hackle, which should be striped with black. The legs of the cockerels present no difficulty, but the hens, like the Blacks, are still very dark. Time and selection alone can improve them, but the law of Mendelism shows that the fault cannot be wholly eradicated. The utility qualities have been spoken of, the exhibition ones, are unique in this respect that well-bred pullets generally improve after the first moult and continue to do so, and thus a good exhibition bird lasts longer for this purpose than any other of the pattern breeds of Wyandottes, such as Gold and Silver Laced. (*See Plate No.* 100.)

—— **SILVER PENCILLED.** These have the colour and marking of the Dark Brahma, and originated from crossing the Silver Laced Wyandottes with Dark Brahma females, and Dark Brahmas with Silver Pencilled Hamburghs. These two lines were united and bred in line by selection of the best. They retain the closer feather which the Brahma has now unfortunately lost, and with it the quality of heavy laying. The first consignment received in England were two trios imported by Mr. John Wharton in 1901, and it is unfortunate that after a brief period, their popularity waned, but apparently is now again increasing through the efforts of a few enthusiastic fanciers who recognise the sterling all-round qualities. In breeding them two pens are required, one for cockerels and one for pullets, on the lines indicated for Partridge Wyandottes. The markings are identical with the Partridge, substituting a silvery white neck, saddle

PLATE NO. 104



Pea-Combed White Yokohama Cock.

(The property of Miss G. S. F. Wilson, Sandridge Park, nr. Totnes, Devon.)

Winner of 1st and Cup for best Cock or Cockerel, Club Show, 1907, and many other prizes.

and back in the cock for the orange red hackle and rich red back and wing. Want of clearness in colour and good striping in hackle are the chief faults at present, and also that of white ticking on breast and thighs. Another tendency in the cocks and hens alike is a brown tinge, the result of the Partridge having been used to improve clearness of pencilling. In the hens the ground colour seems to vary considerably, but it will be found that a dark steel grey lasts better, the pure grey often being very brown after a moult, this showing even in pullet feathers. Moreover it is much more easy to obtain properly striped hackles in the females of the steel-grey shade. (*See Plate No.* 101.)

——**COLUMBIAN.** This bird has the colour of the Light Brahma. There are many theories as to its origin, but enquiries show that whereas one strain resulted from Barred Rocks mated to White Wyandottes and another from Light Brahmas and White Wyandottes, the former had to resort to the Brahma to improve the neck hackle which the large percentage of birds still have, especially in the males. There has been no "boom" in the variety, but, what is better, a steady growth in public favour, which is, therefore, likely to be the more lasting. The body colour must, on the surface at least, be of the purest white, and in the best in this respect will be found a bluish undercolour, as free as possible from black halfway up the shaft. The cocks must have a silvery white hackle marked by an intense sharp stripe, free from an outer dark fringe and from the objectionable black at base; the stripe must finish on the feather without widening at the end. Very few cockerels at present have such hackles; they are either deficient altogether in striping or blotchy at base, with brown shading instead of intense black throughout. The tail must be a green glossy black. The females are farther advanced, but many still show that sappy top colour which in the cocks is a real yellow instead of white. The hackle is better, and many specimens now show good Brahma marking, though here again the black is too often brown and not broadly and densely and sharply striped. The tail should be black, but lacing is not a serious fault. In mating a pen which will alike produce good exhibition cockerels and pullets, standard birds, as far as possible, must be selected being careful to avoid the following faults: Feather on leg, anything but a Wyandotte Comb, colour other than white (though the blue undercolour is most valuable in the breeding stock); black elsewhere than in the standard places and black which shows much brown. Some cockerels will show stripe in saddle and they, if very dark hackled, may be used with hens deficient in striping, success, however, depends upon using the sharpest and densest hackles procurable, and thus steering clear of that undefined cloudy hackle which has often been tolerated in the Brahma with the worst results. The perfect Columbian will be, like the perfect Brahma, a wonderful bird to look at, and by many is now admired more than any others. The yellow leg heightens its beauty. From a utility point of view, none of the family can surpass it. (*See Plate No.* 102.)

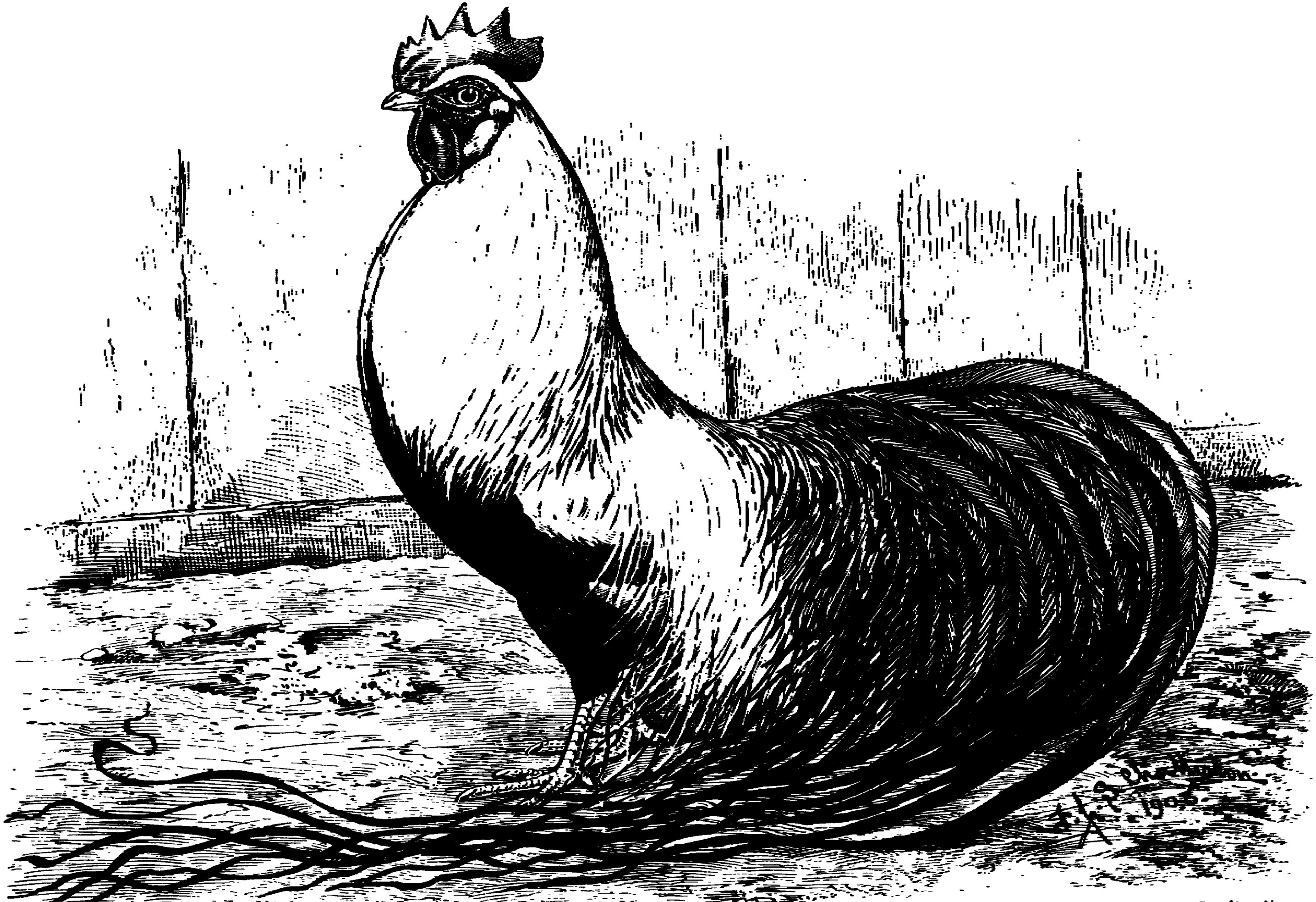
——**BUFF LACED.** This is a bird with a rich buff ground colour and white lacing. It originated in America in the hands of Mr. Ira C. Keller, who commenced in 1886 to cross the Golden Wyandotte with Whites, and almost simultaneously in 1897, the Rev. J. Crombleholme and the Rev. J. W. A. Mackenzie made importations. Usually in a new variety the females more quickly reach standard requirements than the males, but here as with the Buffs the reverse order prevailed, and so the late Mr. Isherwood also found in a remarkably good attempt to introduce a purely English-bred bird. Being descended from the Gold the simplest way to describe them is to say that where the Gold is bay in colour the Buff Laced is buff, and where the Gold is Black Laced this variety is white. In breeding them the difficulty is to avoid blue and black feathers where there should be white, and the red which so often in America seems to pass for buff. Nothing can be added, in giving methods of breeding, to that which has already been said in writing of Silver Laced. It would be well if more breeders could be induced to take up and cultivate so charming a variety.

——**BLUE LACED, OR VIOLETTE.** These met with a better reception than the Buff Laced, perhaps because it was easier to breed, since the blue lacing came more naturally than the white and a red ground colour than buff. Newer varieties have, to a great extent, taken their place, but still a fair number of breeders cling to a charming fowl, which, though small, compensates for this by really extraordinary laying powers. Again, Mr. Ira C. Keller appeared first in the field and again the cross was Golden Wyandottes on the White, which in the first place produced some solid blue pullets and afterwards blue laced on a golden bay centre. It was left to English breeders to improve them, and much was done by a Mr. E. P. Chance, who introduced the blue Madras Game. Some tried the Andalusian, but so many faults of loss of type, white lobes, etc., were evident that this course had fortunately to be abandoned. We require to increase size and stamina to-day, and the Golden Wyandotte and Buff Laced blood might again be used with success.

——**CUCKOO.** Might be better called a Rose Comb Barred Rock, and allowed to take its position among the obsoletes. It is still kept, but never seems likely to advance further, for it has few of the characteristical types of the Wyandotte, and is far inferior to the Rock in colour and size. The ground colour should be a greyish white or light blue grey, evenly barred with bluish black, free from rust or smutty disfigurations, and in breeding the lines of Plymouth Rock may be followed.

——**BLUE.** A Blue was sure to follow the introduction of a Black, and here, so far as is known, we have for the first time a variety of purely English origin. In 1908, it first came into notice, and a club was formed. It is to be hoped that the same thing will not happen as did with the Black, the purchase of blue fowls from farmyards, and their progeny bred from and sold as the genuine Blue Wyandotte. Disaster will follow disappointment. The writer having been a large breeder of the variety, and fearful of a valuable fowl losing friends, proposes giving fully, here, the methods he used in producing it. The Andalusian cross was a fatal mistake in connection with the Blue Laced, and it will be found to be no better in the "strains" which careful enquiry show, have without exception depended on this variety to get blue colour. Further, it is unnecessary, for we have the material we need at hand in the Silver Laced, Silver Pencilled, Blue Laced, White and Black Wyandottes, and by using these we retain type, the characteristic utility qualities of the Wyandotte, and go far to eliminate the lacing of the Andalasian. The writer's start was the crossing some twelve years ago of a Blue Eastern fowl, not unlike the Wyandotte on Silver and Blue Laced Wyandottes. To the progeny were put Black and Silver Pencilled Cocks, and by continued selection bringing in pure Blacks, Whites and Silver Pencilled to get rid of the foreign type and lacing, always selecting Blacks as sound in colour as possible on the surface, but white in undercolour and laying stress on the males being good in type and leg colour. The results showed that the females are far more easily got than the males, and while

PLATE No. 105



By permission of "Poultry."

Duckwing Yokohama Cock, "The Mikado."

(The property of Mrs. Masters, Olive Mount, Maindee, Newport, Mon.)

Dairy Show, 1st Cardiff M.S. 1908.

many continue to show, and will probably always show in some instances, the lacing which apparently is associated with all blue-coloured fowls, yet a percentage of them come a perfectly even blue throughout, dark or light according to the male used. Where Pencilled blood is strong the colour is lighter and brighter than from Blacks, but proportionately the next generation show, as with all blue fowls, a larger percentage of white and black chickens. Very few Whites are retained; the Black are most valuable for breeding sound Blues; indeed, Black to Blue or Silver Pencilled to Blue will hatch as many as ninety per cent. Blue, whereas seventy-five is high if the Whites are used. There is no doubt some breeders will use Rocks with success in getting a percentage of good-coloured chickens, but "cuckoo" is a very strong and dominant colour in breeding, and will never be entirely eliminated. What is meant by blue seems a stumbling block to many. It must be at once conceded that there will be different shades, but whereas in the exhibition females we must avoid a light washed-out grey or a dark blue black, any shade between these is permissible, the ideal being one level colour throughout and free from any trace of lacing. In the cockerels we shall never get a uniform colour, the darker shade of hackle and back will always be present, and, indeed, provided this is a dark blue and not a black, the contrast will make the bird of striking appearance, heightened by the yellow leg and red comb and face. We appreciate beauty by contrast; in Nature and all else we call beautiful we find these contrasts and so must it be with the Blue Wyandotte, which should have a large run of popularity and find its way into the hands of many breeders. (*See Plate No.* 103.)

—— **WHITE LACED BLACK.** This is—with the exception of Spangles—the very latest addition to a breed which now numbers fourteen varieties. The idea is not a new one. Several breeders have been at work, but they made the fatal mistake of introducing Houdan and other spangled blood incapable of producing laced birds, and those who tried Yokohama were no more successful. As the name indicates the bird is an exact counterpart of the Buff Laced, only on a black ground colour comes the white lacing. The composition of the breed is almost purely Wyandotte, and the foundation is in dark Double Laced Silvers and Silver Pencils. The Buff Laced has also been used, but the results show too much white on top in the cockerels, and an experiment with a Birchin Old English Game produced still more white on top and helped not at all in getting lacing. This last, has therefore, been discarded and the future evolution of some very strongly laced birds, must be by selection and perhaps resort to that imported breed, which for the present the writer prefers to be nameless, but to whose strongly dominant white lacing the success in producing the variety which has hitherto proved so baffling, is due. Their popularity should be pronounced, for they are of strikingly beautiful and typical appearance, and the plumage is such as will suit the town dweller and the country fancier.

—— **SPANGLED.** This appeared simultaneously with the White Laced Black and was originated by the Rev. J. W. A. Mackenzie. It is a striking fowl of black colour, and evenly tipped on feathers with white, the legs also being spotted. A pure Wyandotte, being from Blacks and Whites, it has all the grand utility qualities of the breed and will probably be appreciated by the lovers of spangled fowls.

YARDS (*see* "Accommodation").

YOKOHAMA. The Yokohama, as its name suggests, hails from Japan, and one of its distinctive features is that it has a pea-comb, is extremely game in its disposition and appearance, and is, in truth, the fighting cock of the country. But, to save too many classifications, breeders connect under the same name a bird called, on the European Continent, the Phœnix. This is the real Long-Tail of Japan, and is bred and selected for its feathers. These have the single comb and the cock has hackles sometimes eighteen inches long, whilst its tail measures anything up to eighteen to twenty feet long. But, to ensure this, the Japanese make them undergo a regular training, such as feeding on special foods (more or less of secret admixture) and keeping the birds on high perches from which they are only let down at intervals for food and exercise. Whilst the latter is being performed, the tail is held up by a boy who follows the cock, or else a sort of roller X is fixed to the body of the bird, and the tail is rolled round upon it. The cocks are kept very jealously in their country, and though, occasionally they may be bought for a big price and exported, the Japanese vendor is shrewd enough to sell an ordinary short-feathered hen with the cock, and so the breeding is not pure.

In England, a breeder is well satisfied if he gets a cock with a tail over forty inches long, and hackles to measure twelve inches, and though this may appear rather a large reduction, yet Yokohamas make an agreeable contrast to other fowls, and they are not treated differently from the other farm-house poultry. These birds are most prolific layers, comparing favourably with the heavier and larger breeds. Their eggs are too small for the market demand, but they are exactly suited to the sick-room, nursery and breakfast-in-bed requirements — a pretty shape, lightly tinted shell, and delicate flavour. As table fowls, though small, they are plump and small-boned, the flesh white, tender and short-grained. They have the slight gamey flavour that we appreciate in the Guinea-fowl, and, they are superior eating to many a pheasant.

There is another side to their utility qualities which should not be overlooked —they are excellent foragers. This is an advantage where food is dear, and apt to swallow up all the profits. There is a further utility point which compares favourably with many breeds. They are not over-broody, and they lay a large number of eggs before they want to sit. They are easily broken of broodiness, and soon begin to lay again. But if they are required for sitting there is no better sitter or mother. They are wonderfully light and careful on the eggs, and scarcely ever break one if not meddled with. They seem to realize that three weeks' arduous work is before them, and, they take their exercise, bath and food punctually and regularly. The consequence is, when the little ones arrive their feathers are clean and close, and they are in good fettle to look after their precocious little people. For they are precocious compared to other chickens. They feather quickly, and in a few weeks their tails are so prominent that it is easy to tell the cockerels.

The less Yokohamas are fed and the more they are allowed to forage for themselves, the better their health, the heavier the egg-basket, and the more fertile the eggs will be. And their plumage, which, after all, must be looked upon as the Yokohamas' chief point, gains the glorious beetle-green sheen, and their hackles and tails grow long and plentiful.

Yokohamas may be pea or single combs, and in colour they are White, Silver Duckwing, Gold Duckwing, and Spangle. They must infallibly be game in every way—their eye bright and clear, good, upstanding carriage, small head, long and slender shape. The coloured varieties must have willow or horn beaks and legs. The white have white or yellow legs and beak. They should never have more than four toes. The carriage of the tail is low, forming a graceful line from the shoulders to the ground. The hens must have just the same carriage as the cocks, and their tails are longer, more curved, and more graceful than any other breed. The saddle hackles long and drooping over the tail.

As show birds they excel, for they enjoy being looked at and the companionship of human beings. They are sufficiently conceited to come well up to the judge's stick and show off, so they are no trouble to train. This love of companionship, again, stands them in good stead in a confined run, backyard or surburban garden. (*Plates Nos.* 104 *and* 105).

THE
ENCYCLOPÆDIA OF POULTRY

BUSINESS SECTION.

ANCONAS

BERESFORD-WEBB, NORBRYGHT,
SOUTH GODSTONE, SURREY, ENGLAND.

Breeder of Single- and Rose-comb Anconas, Croad Langshans, White Wyandottes, Black Wyandottes, etc. Speciality, Anconas. Birds always for sale. Eggs from Dec. to July. Illustrated Catalogue free. (See Plate No. 3).

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BANTAMS

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BOLTON WOODS, BRADFORD.

Breeder and Exhibitor of Modern Game Bantams. (See plates Nos. 12 and 13).

ENTWISLE, J. F., THE FIRS,
CALDER GROVE, NEAR WAKEFIELD.

Breeder and very successful Exhibitor and Exporter of Bantams. Originator of Wyandotte Bantams. Many thousand Cups and prizes have been won during the successful run of this firm, which dates from 1856, when founded by the late W. F. Entwisle. Speciality: Modern Game, Old English, Indian Game, Pekins, Polish, Wyandotte and Light Brahma Bantams. Birds always for sale, and Eggs during the season. Export orders a speciality. (See Plate No. 19).

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BANTAMS—continued.

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Breeder and Exhibitor of MODERN PILE GAME BANTAMS. Winner at all leading Shows. Birds always for sale from 10/- upwards. Some of my wins during the last four years include: two 1sts and Special, Crystal Palace; 1st, 2nd, 3rd, Alexandra Palace; 1st Challenge Cup, Special, two 2nds and 3rd, Kendal; 1st, 2nd, 3rd, Manchester; two 1sts, two 2nds, two 3rds, Leeds; 1st Special, Birmingham; 1st, two 3rds, 2nd, Otley; two 1sts, 2nd, two 3rds, Keighley, etc., etc.
(See Plate No. 11).

ROBERT PARKER,
ROTHBURY, WYMONDHAM, NORFOLK.

Breeder and Exhibitor of Modern Black-red, Brown-red, Birchen, Pile and Duckwing Game Bantams. Birds for sale September. (See Plate No. 10).

ROBERT PASHLEY,
THE KERNE LODGE, ROSS.

Breeder and Exhibitor of Partridge-bred Black-red and Duck-wing O.E.G. Bantams. Winner of Challenge Trophy and Special best O.E.G., Crystal Palace, 1906. Four First Prizes, Crystal Palace, 1907. More prizes in O.E G. Bantams, open classes, at Dairy, Crystal Palace and Birmingham than any other exhibitor, 1908. Birds for sale from 10/- each. (See Plate No. 7).

FRANK E. RICE, WAVENEY HOTEL,
BURGH ST. PETERS, BECCLES.

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BANTAMS—continued.

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Breeder and successful Exhibitor since 1887 at Dairy, Palace, Birmingham, etc., of pure white and black, white and buff with black points, grey, duck-wing and partridge Japanese Bantams. Mr. Williams won in 1908 1st prizes at Dairy, Palace and Birmingham Shows
Show birds and breeding pens always on sale.
Export a speciality
(See Plate No. 14).

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Cockerel and Pullet blood. One of the choicest and best and oldest strains in existence. Frequent winners at the Great Shows. Birds for Sale—Eggs not sold. (See Plate No. 22).

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Breeder and Exhibitor of White Cochins and Black Cochins. Winner of the White Cochin Challenge Cup, 1907, and of prizes at all the leading Shows
(See Plate No. 25).

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FLASS HOUSE, DURHAM

Breeder and Exhibitor of Buff Cochins, whose birds won their first cup in 1869, and have continued to win at all the best Shows up to the present time, this year securing Champion Cup, Royal Show; Champion Challenge Trophy, Crystal Palace; and Special best Breeding Pen, any variety; Champion Challenge Cup, Birmingham. Also Breeder of BUFF and [illegible] ORPINGTONS and DAF [illegible]
(See Plates Nos. 23 and 24).

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Breeder and Exhibitor Dark, Silver Grey and Cuckoo Dorkings, thirty years. Winner of £30 Poultry Club Trophy, 4 Champion 25 Guinea Cups at Crystal Palace; 4, Birmingham, Dairy and Liverpool; and over 1,000 other cups, trophies and prizes. Birds supplied to His Majesty King Edward VII., and exported to all parts of the world. Prices moderate. Eggs from best birds, 1/- each
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Breeder and Exhibitor of Cayuga Ducks for the last 12 years. Exhibition and stock birds always on sale. My wins during 1908 include all (4) Firsts at Waterfowl Club Show, Manchester; all (3) Firsts at Crystal Palace, and First Birmingham. (See Plates Nos. 34 and 35).

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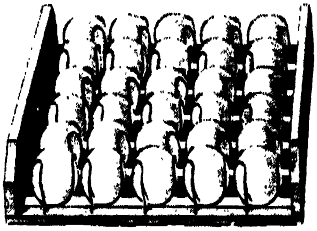

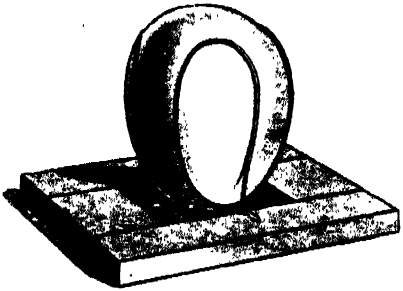

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10 dozen size	(4 2½ doz. trays) ..	7	6
12 ,,	(3 4 ,,).. ..	8	6
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20 ,,	(4 5 ,,).. ..	11	6
24 ,,	(4 6 ,,).. ..	13	6

SPECIAL NOTE.—These crates are supplied with close-boarded top and sides if preferred.

Extra Trays, 2½ dozen size	1	9
,, 4 ,, ...	2	6
,, 5 ,, ...	3	0
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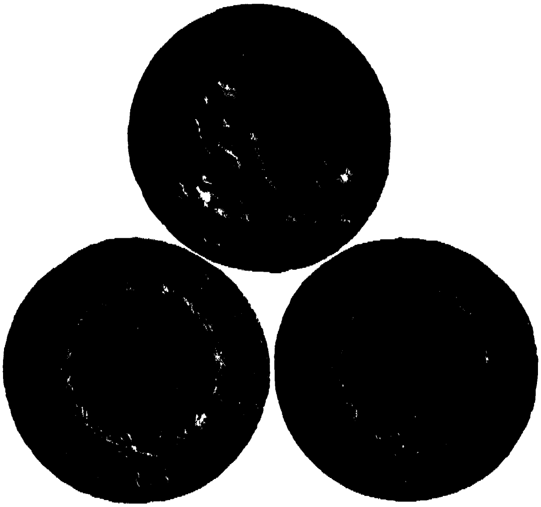

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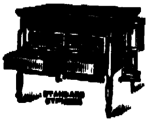

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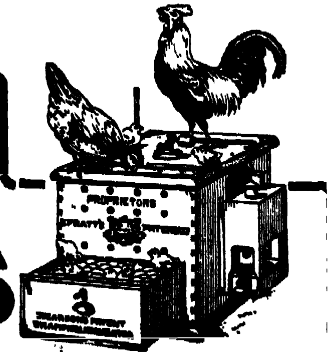

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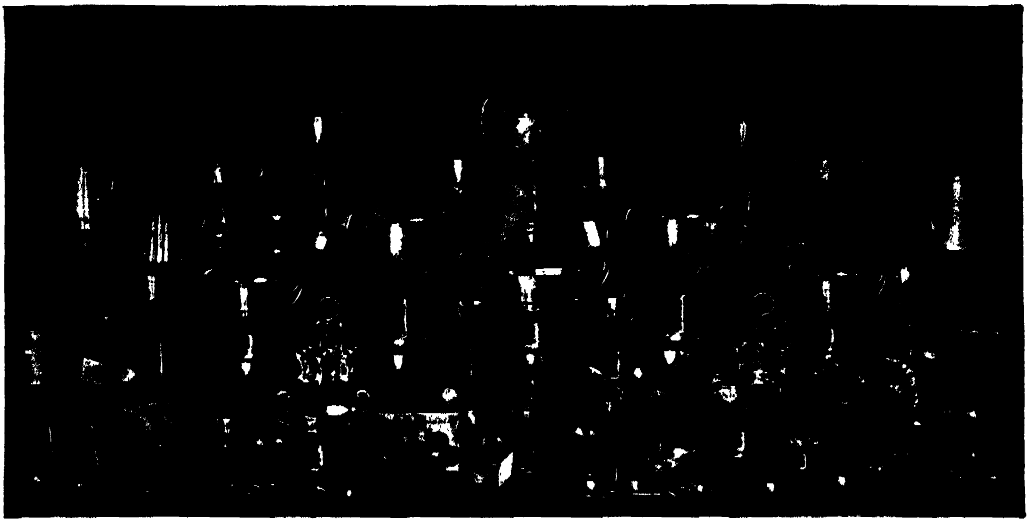
The most successful stud of White Orpingtons in the world. Winners of more First Prizes and Challenge Cups at Crystal Palace, Birmingham and Club shows than any other three studs combined. Birds for show and stock for sale. Eggs in season. Write for full particulars.



The above is a Selection of Silver Cups, Medals, Etc., won by

MRS. WILKINSON,

The most successful Breeder and Exhibitor of

BUFF, BLACK, AND WHITE ORPINGTONS, BARRED, BUFF, AND WHITE PLYMOUTH ROCKS,

In Great Britain, having won

NINETY-ONE SILVER CUPS

At Grand International, Crystal Palace, Birmingham, Manchester, Kendal, York, etc.

Winner of Champion Challenge Cup for best Buff Orpington Cockerel four years in succession.

Also winner of Champion Challenge Trophy three years in succession for the best Plymouth Rock at the Grand International Show, Crystal Palace.

These Achievements stand unique in Buff Orpingtons and Plymouth Rock History

Mrs. W. has bred more Challenge Cup winners, and supplied more Breeding Pens and Eggs from which winners have been produced during recent years than any other breeder in England.

TWENTY-FOUR SILVER CUPS

Have been won by purchasers of Eggs and Stock at Shows where all the prominent Exhibitors compete.

At Crystal Palace alone in 1907 and 1908 EIGHT SILVER CUPS were won by her customers, thus proving she sells as well as retains good reliable Stock.

BREEDING PENS OR TRIOS A SPECIALITY AT MOST REASONABLE PRICES.

Also SINGLE COCKERELS AND PULLETS OF ALL ABOVE VARIETIES.

Three Days' approval with pleasure. Terms—Cash with order.

Eggs for Hatching in Season from all above-named Varieties. Prices on application.

Burrow House, Scotforth, Lancaster.

TELEPHONE—200 GALGATE. TELEGRAMS: WILKINSON, BURROW, LANCASTER.

ORPINGTONS—continued.

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SCOTFORTH, LANCASTER.

Celebrated Breeder of Champion Challenge Cup Buff, Black and White Orpingtons, Barred, Buff and White Plymouth Rocks, having won 91 Silver Cups and thousands of First and Special Prizes at the Grand International, Crystal Palace, Birmingham, Manchester, etc. She has bred more Challenge Cup winners and supplied more breeding pens and eggs from which winners have been produced during recent years than any other breeder in England. Birds of all above varieties always on sale; also Eggs for hatching in season. (See Plates Nos. 77 and 80).

PEAT MOSS

THE PEAT MOSS LITTER SUPPLY CO., LTD.,
THORNE WHARF COMMERCIAL ROAD,
BLACKFRIARS, S.E.

Peat Moss specially granulated for Poultry. Keeps their feet perfectly dry, and avoids gapes, etc. Parasites cannot live where Peat is used. Produces very rich manure. If your Poultry Appliance Merchant does not supply this, apply to The Peat Moss Litter Supply Co., Ltd., Thorne Wharf, Commercial Road, Blackfriars, S.E.

PLYMOUTH ROCKS

MESSRS. BATEMAN (MR. JAS. BATEMAN),
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Have won Cups, Medals or Prizes at Crystal Palace and Dairy Show every year since 1895, and have won with their Plymouth Rocks at every important show in the Kingdom. They are the Pioneer Breeders of Buff Rocks. Specialities:—Plymouth Rocks of all varieties, Barred Plymouth Rock Bantams. Exhibition and Stock Birds always on sale. Correspondence invited. Specialists in Export arrangements. (See Plates Nos. 16, 78 and 79).

U. R. FISHEL,
"FISHELTON," NEAR HOPE, INDIANA, U.S.A.

The largest speciality Poultry Farm in the world; 120 acres devoted to Fishel's White Plymouth Rocks. *The best in the world.* Winner at all leading shows in every section of the world. Send for 56-page Catalogue, the most elaborate poultry catalogue ever issued. Export trade given our best attention. (See Plates Nos. 83 and 84).

POULTRY JOURNALS

FEATHERED LIFE, the Utility Poultry Journal, Weekly, Wednesdays, 1d. Devoted solely to the management of Poultry for pleasure and profit

RELIABLE POULTRY JOURNAL, Quincy, Illinois, U.S.A. The foremost American magazine devoted to the standard-bred and Utility Poultry Industry. Its contributors are the best-known poultry authorities in the world. Illustrated by F. L. Sewell, the world's greatest poultry artist. Published monthly, price 50 cents per year; $1.00 (or 4s. 2d.) outside of United States. Send for sample copy.

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JOHN BAMFORD,
BAKEWELL, DERBYSHIRE.

Breeder and Exhibitor of the Redcap Fowls. Winner at all the leading Shows in Redcap classes, including the late International Show held at Crystal Palace, London, Nov. 1908. I sent two exhibits and won 1st cockerel, 1st hen, also Special for the best bird shown by a member of the Redcap Club. I am offering sittings of eggs at 10/6 from the pen, including the two Palace winners, so that all the Poultry Keepers may try a sitting of the noted Redcaps. Birds for sale, winners or utility birds. Particulars on application (See Plate No. 85).

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THE E. T. DEGRAFF POULTRY FARM,
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The largest breeders and exhibitors of Rhode Island Reds in America.
Known the world over. Great winners for years at America's best shows. This strain has won as many prizes in America as all others combined. Stock and eggs for sale at all times of the year at reasonable prices. We guarantee satisfaction. We export to all parts of the world. (See Plate No. 86).

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MARY STREET, ST. PAUL'S, BIRMINGHAM.

Rings (Aluminium), Interlocking Markers, numbered and year, 2s. 6d. half gross. "Day Old Chick," Rings numbered, 1s. 6d. half gross. 1s. 9d. larger sizes.

SUSSEX FOWL

HUBERT G. STOCKER,
CRAIGWEIL HOUSE, ALDWICK, BOGNOR.

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Poultry Houses, Incubators, etc. All necessary Timber for manufacture or repairs. Any quantity. Quality guaranteed. Prompt delivery. Write for prices.
Telephone 14757 Central.

SHARP & MATTHEWS, Timber Merchants,
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Poultry Breeders and others will do well by sending their orders and enquiries for Timber to us. We hold Stocks of Yellow and White Planks, Deals and Battens of good quality at Low Rates. Flooring Boards and Match Linings in all thicknesses, Feather Edge Boards, Scantlings in all sizes (planed and unplaned), Mouldings, Laths in all widths and thicknesses. Orders by post promptly attended to.
All Orders Free on Rail in London.

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THOMAS ABBOT, The Norfolk Live Stock and Poultry Farm, **WYMONDHAM,** Norfolk.

Exhibitor and Breeder of almost all pure-bred Poultry, Ducks, Geese and Turkeys. I can supply breeding pens, trios, pairs or single birds of the highest quality. Bred from my Challenge Cups and First Prize winners at Crystal Palace, Dairy, Birmingham, York, Leeds, Royal and Royal North Lancashire, Norwich and Aberdeen winners. All birds sent on approval with pleasure, and satisfaction guaranteed. Birds shipped to all parts of the world. No man in the fancy knows more what birds require during the voyage than myself, having crossed the Equator ten times. I guarantee with decent weather to ship, in my specially-constructed coops, birds to arrive as fresh as the day they left home, and all risks taken by me. Eggs supplied in season from my challenge cup winners. Catalogue free on application. (See Plates Nos. 29, 89 and 90).

LADY HARLECH,
Brogyntyn, Oswestry.

Breeder and Exhibitor of High-class White Turkeys and Emden Geese. Eggs for sale from the above, and young birds in autumn, including prize winners. Apply J. Moses, Home Farm, Brogyntyn, Oswestry.
(See Plates Nos. 91 and 92).

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Breeders and Exporters of all kinds of Poultry. They have some of the finest stock in the world, and every bird is for sale. Write to them for particulars, stating clearly your wants and they will guarantee you satisfaction.

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COMMON SENSE MANUFACTURING CO.,
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THE COMMON SENSE EXTERMINATOR.

No smell from dead.
No unnecessary pain.
Will keep for years.

DOES NOT CONTAIN DISEASE GERMS.

As supplied to British Government.

Prices—8/4 tin (kills 500 rats), 4/3, 2/6, 1/-, post-free.

Write for free booklet on Vermin and the Spread of Disease.

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The Champion Breeder and Exhibitor of Black Wyandottes. Winner of more prizes at the classical events than any three breeders put together. Eggs and Birds always for sale. Birds exported to all parts of the world. (See Plate No. 98).

H. C. ARDRON, The Fosse,
Syston, **LEICESTER**
(Hon. Secretary and Treasurer, Blue Wyandotte Club).

Breeder and Exhibitor Blue Wyandottes. Birds always for sale from 10s. upwards. Eggs 21s., 15s., 10s. 6d. per dozen; unfertiles replaced. These Birds are pure Wyandottes and perfectly Blue. Pens contain prize winners. Please write for particulars. Inspection invited. (See Plate No. 103).

DAVID FOULIS,
Cairnie, **ASTON,** Hertfordshire.

Breeder and successful Exhibitor of Silver Pencilled, Partridge, and White Wyandottes, Buff, and White Orpingtons. Winner in the Utility Poultry Club laying competition. Laying Strains have been carefully built up for many years. Prize and Utility Birds always for sale. Eggs in season. Send for Illustrated Catalogue. (See Plate No. 101).

BUSINESS SECTION.

WYANDOTTES—continued.

GARSTANG.

Breeder and Exhibitor of Columbian Wyandottes, Buff and Black Orpingtons. Winners at all the best Shows. Birds always on sale. (See Plate No. 102).

A. C. ROBERTS, HIGHER DURYARD POULTRY FARM, EXETER, DEVON

Specialist Breeder, Exhibitor and Exporter of First-class White Wyandottes. Stock Birds, Day-old Chickens and Sittings of any desired quality. Write for List of Matings
(See Plate No. 96).

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Breeder and Exhibitor of Gold, and Silver Wyandottes. Has exhibition and Pullet-breeding stock birds for sale of both varieties. Also Barred Rocks.

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Partridge, Columbian, Cuckoo and Silver-Pencilled Wyandottes, also English Owls and Antwerp Pigeons. The most successful combination of these varieties in existence. Over 1,000 cups and prizes at the leading Shows. Birds from 10/- each; Eggs from poultry, 10/-, 20/- and 30/- for 15
(See Plate No. 100).

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MRS. MASTERS,
OLIVE MOUNT, MAINDEE, NEWPORT, MON.

Breeder and Exhibitor of Yokohamas, Leghorns, and Buff Orpingtons.
(See Plate No. 105).

MRS. L. C. PRIDE
LINDFIELD,

Breeder and Exporter of all Yokohamas and Yokohama Bantams. Birds and Eggs for sale. Exhibitor at all principal shows.

MISS G. S. F. WILSON,
SANDRIDGE PARK, W. TOTNES, S. DEVON.

Breeder and Exhibitor of Duckwing, White, and Spangled Yokohamas, Buff Orpingtons, Spangled O.E.G. Bantams, White-crested Cayuga and Indian Runner Ducks. Winner of Cup for best Cock or Cockerel at Yokohama Club Show, 1907; two 1sts Crystal Palace, 1908, and many other prizes. Birds for sale at moderate prices. Eggs in season. (See Plate No. 104).

Printed by Percy Lund, Humphries & Co., Ltd., Bradford and London. 23160